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Public Participation in Energy Related Decision Making:
Six Case Studies

Prepared by
The METREK Division of
The MITRE Corporation
and
The National Academy of
Public Administration

Sponsored by
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16. Abstracts Each of the six case studies of this volume documents public participation in Federal and/or State governmental decisions related to energy facility siting. A narrative history followed by limited analysis and conclusions is the common format. Four of the cases involved decisions on specific facilities at specific sites, namely: 1) various state and federal licensing procedures for the Seabrook, New Hampshire nuclear facility; 2) the Maine Environmental Improvement Commission's denial of a permit for an oil refinery on Sears Island in Penobscot Bay; 3) the Atomic Energy Commission's amendment to the license for the Big Rock Point, Michigan, nuclear reactor to allow an increased level of plutonium-enriched fuel use; 4) the AEC's review, arising from disclosure of a geological fault, of the North Anna River, Virginia, nuclear facility. A fifth case documents a series of public meetings conducted in Pennsylvania by the Govenor's Energy Council to consider the "energy park" concept. The sixth study was a narrative history and analysis of RM-50-1, a rulemaking proceeding conducted by the AEC in 1972 and 73 on emergency core cooling system operating standards.

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December 1977

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National Science Foundation

This document contains six case studies prepared for a workshop on public participation in energy related decision making, held at The MITRE Corporation in McLean, Virginia on September 21 and 22, 1976. These studies have been prepared under the supervision of The MITRE Corporation and an advisory panel of The National Academy of Public Administration. The views expressed in these studies are those of the respective authors and do not necessarily represent an official position of The MITRE Corporation, The National Academy of Public Administration or The National Science Foundation.

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ABSTRACT

This document contains case studies of public participation in six decisions on or related to energy facility siting. These studies document the events of each case and then analyze and evaluate the role and mechanisms of public participation in the decision making process.

The six cases studied are the Emergency Core Cooling System; Energy Parks in Pennsylvania; the Seabrook, New Hampshire nuclear plant; the North Anna, Virginia nuclear plant; Big Rock Point, Michigan; and the Searspoint, Maine oil refinery.

These studies were prepared under the supervision of a National Academy of Public Administration panel for publication by METREK, a Division of The MITRE Corporation, and provide the basis for a workshop on Public Participation in Energy Related Decision Making, sponsored by the National Science Foundation and held at The MITRE Corporation on September 21 and 22, 1976.

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Erasmus H. Kloman of the National Academy of Public Administration and Beth L. Borko of METREK coordinated the preparation of these studies. Carla Starkey of the National Academy of Public Administration and Virginia Umstead of METREK coordinated the typing and publication, respectively, for this document.

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INTRODUCTION

This document contains six studies written to serve as the basis for a workshop on public participation in energy related decision making held on September 21 and 22, 1976 at METREK, a Division of The MITRE Corporation, in McLean, Virginia. The workshop, sponsored by the National Science Foundation and conducted by METREK with the assistance of an advisory panel of the National Academy of Public Administration, was designed to provide workshop participants, many of whom occupy adversary positions in the decision making arena, the opportunity to exchange views on the process and mechanisms of public participation. A central purpose of the conference was to foster discussion of process questions in the absence of the pressures generated by debate on policy issues. Workshop participants included individuals who fall within a carefully balanced set of categories representing citizen groups, industry, government at the several levels, and academic institutions.

The studies examine six decisions on or related to the siting of energy facilities. Through an analysis of these studies, workshop participants examined the manner in which energy related decisions are reached, where and how citizen groups intervene, and the extent to which the broad public interest is represented through the process of interest group intervention. A critical issue for discussion was the relationship of decision making through elected government (the legislative institutions) and the machinery of citizen participation through hearings and other means of intervention. The aim of the workshop was to elicit a better understanding and a wider consensus than now exist on some of the underlying issues confronting energy decision makers in industry and government and citizen groups seeking to participate in the decisions. The proceedings of the workshop are contained in the volume Public Participation in Energy Related Decision Making: Workshop Proceedings, MTR 7367, published by The MITRE Corporation in January, 1977.

EXPERIMENT IN RULEMAKING

THE DEBATE OVER EMERGENCY CORE COOLING SYSTEMS

Abstract

This paper offers a narrative history and analysis of RM-50-1, a rulemaking proceeding conducted by the Atomic Energy Commission from January, 1972, to December, 1973, on operating standards for emergency core cooling systems in nuclear power plants. After an introduction that focuses on members of the Commission and the reaction of the major participants to the new rule resulting from the proceeding, the paper describes the history of emergency core cooling systems and the questions that arose over their adequacy, under AEC standards, as safety devices. This section ends with a description of certain adjudicatory procedures melded into the format for legislative-type hearings in order to improve public participation during the proceeding. The narrative of the proceeding places primary emphasis on the roles played by representatives of the Consolidated National Intervenors (CNI), a group composed mainly of environmental organizations. The following analytical section deals with arguments that highly technical scientific problems do not lend themselves to adjudicatory-type hearings. It also argues that CNI, while helping to improve the rulemaking process, failed to understand the underlying reasons for technical disagreements between the AEC and the national laboratories where research on nuclear reactor safety is carried out. The paper ends with a discussion of certain lessons to be learned from RM-50-1.

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EXPERIMENT IN RULEMAKING:
THE DEBATE OVER EMERGENCY CORE COOLING SYSTEMS

PREPARED BY
PHILLIP SAWICKI*

Late in December, 1973--when former President Richard M. Nixon was still refusing to surrender the "White House tapes"--the Atomic Energy Commission announced new performance standards for emergency core cooling systems installed in civilian nuclear power plants. With that--unless one includes a futile appeal of the standards to the federal judiciary--the curtain came down on an experiment in public rulemaking that had already become a legend in Washington.

In length alone RM-50-1 was remarkable. Almost two years had elapsed since it had begun with a prehearing conference on January 17, 1971. During those two years a total of 125 days had been spent in cross-examination of witnesses by attorneys and technical interrogators. The record of the cross-examination covered 22,380 pages in 125 volumes of transcript. Direct testimony (that is, prepared statements) and exhibits introduced into evidence added somewhere between 25,000 and 50,000 more pages. The record in its entirety was, said one AEC attorney, "one of the largest in the history of administrative law." (1)

The record was of far greater significance for another reason, however. It exposed for the first time to the public the

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*Washington freelance writer

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inner workings of the Atomic Energy Commission and its relationships with some of the national laboratories where research into nuclear power plant safety is carried out under contract, and with the large industrial firms which make nuclear power reactors. The sight was not always reassuring. What the record revealed was a welter of professional disagreements between the laboratories and the AEC, gaps in both theoretical and experimental knowledge about emergency core cooling systems, and some weaknesses in the AEC's regulatory functions. The rulemaking proceeding, to change the metaphor, was a blow to the AEC from which it would never recover.

That probably would have been true regardless of whatever verdict the Commission handed down in RM-50-1. As it happened, the 134-page verdict tightened some of the AEC's performance criteria for emergency core cooling systems. The Commission said it believed its new standards afforded the "required reasonable assurance of protection for the public health and safety with a substantial margin." (2)

But the decision disappointed six of the seven major participants in the rulemaking. Only the AEC's Regulatory Staff could smile, collectively, since the Commission's verdict had, with some minor exceptions, supported the staff recommendations.

From the point of view of the Consolidated National Intervenors (CNI), a group of organizations and individuals (see Appendix B) ranging from the Sierra Club and the United Auto

Workers to the Pompeston Environmental Committee of Cinnaminson, N. J., and the Carolina Environmental Study Group of Charlotte, N. C., the Commission's verdict demonstrated that in any controversy pitting the AEC's promotional responsibilities against its regulatory ones, regulation was bound to lose. The Commission's verdict, however, came as no surprise to CNI's leaders. They had expected as much ever since the fall of the previous year when the AEC, citing the prospect of electric power shortages, had ordered its Atomic Safety and Licensing Boards to move ahead on nuclear power plant licensing applications even though the rule-making proceeding was far from over.

Yet at fleeting moments CNI's leaders may have dreamed that the unexpected might happen. As a kind of postscript to the long public hearing, conducted by a three-member AEC Hearing Board, the full Commission itself had heard one day of argument from the seven major participants in October, 1973. At that time Myron M. Cherry, the principal attorney for CNI, had referred to the changes that had given the Commission a new look.

Except for Dr. Clarence E. Larson, a distinguished scientist who had worked at Oak Ridge National Laboratory for twenty-six years before joining the AEC in 1969, only one of its members could be identified with the nuclear power establishment. He was William E. Kriegsman, who had worked at the Commission for twelve years before becoming a White House staff assistant in 1969. Kriegsman, however, was no standpatter. After leaving the White

House to become manager of the Washington office of Arthur D. Little, Inc., he had conducted management studies that resulted in a drastic shake-up of the AEC in mid-1973. Kriegsman had become a commissioner in April of that year.

The other three Commission members facing Cherry included William O. Doub, a lawyer who had been both People's Counsel for and chairman of the Maryland Public Service Commission; William A. Anders, lunar module pilot during the historic flight of Apollo-8 to the moon; and the chairman, Dr. Dixy Lee Ray. Of the five, Dr. Ray was the one who would leave the most indelible mark on the Commission's history, which ended on January 18, 1975.*

A zoologist with a special interest in marine biology, Dr. Ray's background had been in research and teaching before her appointment to the AEC in 1972. Named chairman following James R. Schlesinger's move from the AEC to the Pentagon early in 1973, Dr. Ray was the chief driving force behind the agency reorganization of a few months later.

The reorganization, she had said, was intended "to provide greater emphasis and effectiveness in our safety research programs" and reflected "the importance the Commission attaches to this activity in light of the increasing number of nuclear plants being built by the utility industry, and the relatively rapid scale-up in average plant size." (3)

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*On the following day the Nuclear Regulatory Commission (NRC) assumed the AEC's regulatory responsibilities; its development responsibilities were taken over by the Energy Research and Development Administration (ERDA).

The most significant change of all, however, was buried on page 3 of the AEC's press release. That was the announcement that a new Division of Reactor Safety had been formed, and that its director had already been chosen: Dr. Herbert J. C. Kouts, a senior member of the laboratory staff at Brookhaven National Laboratory and a former member of the AEC's Advisory Committee on Reactor Safeguards (ACRS).

Up until then safety research had been the province of the Division of Reactor Development and Technology (RDT). The creation of a new safety division seemed to be little less than a vote of no confidence in RDT's blunt and, many said, autocratic boss, Milton Shaw.

Then 51, Shaw had taken over RDT in 1964 with formidable credentials. A protege of Vice Adm. Hyman G. Rickover, Shaw had headed the AEC-Navy group of scientists and engineers that had developed nuclear propulsion systems for the aircraft carrier Enterprise and the guided missile cruiser Long Beach, the world's largest nuclear-powered warships.

To the leading environmentalist organizations and others concerned about nuclear power, however, Shaw had a worse claim to fame. In their view Shaw was most directly responsible for what they saw as a cavalier attitude within the AEC in regard to the safety of ordinary light-water reactors in commercial power plants. Shaw had never tried to hide the fact that his chief preoccupation was the successful development in the United States of the so-called "breeder" reactor for the production of electric power. For many years he--and many others within the nuclear power establishment--had been enthralled by the shining vision of the breeder. It was the legendary Phoenix in the twentieth century, a reactor that would produce new fissionable material, or nuclear fuel, as it consumed the old.

Shaw had argued vehemently against the reorganization. Having lost, he submitted--or was forced to submit--his resignation, effective June 30, 1973. That also was James T. Ramey's last day as an AEC commissioner. A long-time ally of Shaw's, Ramey too had fought the reorganization. As someone with particularly close ties to the Joint Committee on Atomic Energy, his reappointment had once seemed fairly likely. Instead, his term quietly expired, and Anders replaced him.

These departures, the new safety division, the exposure of AEC flaws during the rulemaking hearing, and the new and tighter performance standards all fell short of satisfying CNI, however. Its two chief technical interrogators, Daniel F. Ford and Dr. Henry W. Kendall of the Union of Concerned Scientists in Cambridge, Mass., asserted that the AEC's new criteria for emergency core cooling systems demonstrated " continuation of the AEC's cover-up of critical safety problems." (4)

What CNI wanted, the New York Times reported, was "substantial derating," (i.e., steep reductions in power output by nuclear plants already in operation), suspension of approval for new construction permits, design review, and "a greatly expanded program of research." (5)

It was not without significance that Ford and Kendall also said that "the nuclear industry could hardly survive imposition of stringent safety standards". (6) Two and a half years later Myron Cherry, discussing the rulemaking proceeding with this writer, commented that "in light of the rampant dishonesty in the nuclear industry which I have observed first hand and the reluctance to solve serious problems, I would do anything within the framework of the law to stop the nuclear power industry". (7) CNI's fundamental argument was that the AEC, in its zeal to promote and protect nuclear power, had unconscionably neglected nuclear safety. To correct that imbalance the Consolidated National Intervenors wanted a degree of regulation that might conceivably have crippled the industry.

Yet if CNI was unhappy, so too were those who had been at the opposite end of the spectrum during the rulemaking hearing--the four major manufacturers of commercial nuclear power reactors (General Electric, Westinghouse, Babcock and Wilcox, and Combustion Engineering) and the Consolidated Utilities, a coalition of seventeen major utility companies from every region of the country, the best-known being Consolidated Edison of New York (See Appendix C).

Promulgation of the new criteria, the AEC Regulatory Staff had said, would probably result in an average derating of 5 percent for operational nuclear plants. They also would require changes in nuclear fuel rods and emergency core cooling systems. As a consequence, the public would pay certain costs for an unquantifiable increase in the margin of safety at nuclear power plants. Some of the costs--the fuel rod and cooling system changes, the increase in air pollution resulting from increased use of fossil-fuel plants to compensate for nuclear plant derating--were hard to determine. But measurements of others could be attempted. AEC estimates included $193-million between 1974 and mid-1976 to make greater use of fossil-fuel plants, and $46-million over the same period of time to pay for increased oil imports for conventional plants.

From the viewpoint of the reactor manufacturers (called "vendors" in AEC parlance) and the utility companies the increased costs were clearly unnecessary. Throughout the rulemaking hearing their attorneys had argued that even the Interim Acceptance Criteria for emergency core cooling systems, promulgated in June, 1971, were more than adequate to assure public safety. The new criteria, in their view, did no more than make an already negligible risk even more negligible. In other words, the new standards amounted to little more than a placebo to reassure that portion of the public that took CNI's arguments seriously.

The Commission, as perhaps would have been expected, took a middle path that strengthened safety while keeping nuclear power plants in operation. The new criteria (and the evaluation models, which state the various subjects which must be involved in theoretical, and highly complicated mathematical analyses, of loss-of-coolant accidents and core cooling system performance) showed some of the changes which CNI had supported.

In the introduction to its comprehensive opinion the Commission said it realized that

> the knowledge in regard to a number of facets of the analysis of a loss of coolant accident is imprecise; it is partly for this reason that there is an on-going Water Reactor Research Program. The Commission is confident, however, that the criteria and evaluation models set forth here are more than sufficiently conservative to compensate for remaining uncertainties in the models or the data. (8)

In the end, then, it was a matter of the AEC's judgment against that of CNI, the vendors, and the utilities. While the new criteria may have suggested to some at the time only a recognition of political realities--a greater attention to soothing concerned elements of the public and the placing of greater distance between the AEC and the industry--nothing in the Commission's lengthy opinion confirms a political inference. All that can be found is a discussion, often complex, of a wide array of technical matters, with substantial recognition of different views, including in some cases those of the Regulatory Staff.

Prelude to the Rulemaking--1963-1971

In 1963, under AEC auspices, work began on a Loss-of-Fluid Test (LOFT) reactor at the National Reactor Testing Station (NRTS) in Idaho. NRTS is actually a barren area roughly the size of Rhode Island, dotted here and there with laboratories and reactors built for the purpose of studying nuclear power plant operation and safety matters.

LOFT was to be a comparatively small (55 megawatts) nuclear reactor built for one specific purpose--to determine, by means of an actual experiment, what happens when a reactor abruptly loses all its normal cooling water.

Water is, as the following names would suggest, an essential element in both types of commercial power reactors most prevalent in the United States, pressurized water reactors (PWR's) and boiling water reactors (BWR's). The importance of water, in part, stems from the fact that it keeps water-cooled reactors safe. In large commercial reactors the uranium oxide fuel, formed in thimble-size cylinders, is contained within very long and narrow metal rods customarily made of zircalloy. Once a reactor is put into operation water is always important, but never more so than when the reactor is operating at full power. At that point all of a large reactor's 40,000 fuel rods are hot, with the inner temperature of many of the fuel pellets at about 4000 degrees F. and the temperature on their outer surfaces at about 2000 degrees F. This heat radiates outward through the zircalloy, called cladding, to the surrounding cooling water. The water keeps the cladding at approximately 600 degrees F., well below its melting point.

Were all this water to be lost (through a broken pipe, for example) the temperature of the cladding would shoot up to about 1500 degrees F. within a matter of 10 to 20 seconds. There the temperature would be temporarily stabilized, due to the fact that the outrushing water would carry away a significant amount of heat. If new water was not added, however, the cladding temperatures would then continue to rise rapidly, threatening the structural integrity of the cladding, which would deform (due to changes in pressure), then "dry up," rust, and crack open.

As the integrity of the cladding was destroyed the fuel pellets would begin to fall from the rods and accumulate at the bottom of the reactor tank. Should enough of them accumulate, they would form a hot and uncoolable radioactive mass, so hot that it would burn through the reactor tank (usually called the pressure vessel) and possibly through the steel-and-concrete containment of the building itself. This hot mass might then subside into the ground, and depending on various circumstances intense radioactivity might then escape into the atmosphere, ground water, or both.

Water, of course, is also the medium for the transfer of heat which eventuates in the production of electricity. In boiling water reactors during normal operation the hot water in the pressure vessel turns to steam which drives an electric turbine. In pressurized water reactors the hot water moves through a pipe within a steam generator filled with cold water. Here the hot water heats the cold to produce steam.

In both types of reactors the pressure vessel containing fuel rods and water is kept under high pressure by means of a pressurizer. This is true in both pressurized and boiling water reactors, although the pressure in the former is notably higher.

Thus, given the potential consequences of loss of cooling water the planned LOFT reactor experiment had a scientific logic, and a precedent in other experimental tests. Ten years before work started on the LOFT reactor the AEC had begun its BORAX (for boiling-water reactor experiment) series of tests, also at NRTS. The purpose of the BORAX tests was to determine what happened during a power "excursion," an unplanned and rapid rise in reactor power. Excursions indicate malfunctioning control rods, which operate more-or-less like the throttle of a car. Inserted among the fuel rods, control rods are made of material that can absorb the neutrons resulting from the nuclear chain reaction within the fuel. In other words, they can be used to slow down or speed up the chain reaction that produces heat.

What BORAX I demonstrated, according to the AEC, was that "a boiling reactor has a high degree of inherent safety in its ability to spontaneously or naturally shut itself down in a power excursion." (9) What the experiment confirmed, in other words, was the so-called "Doppler effect," a complex physical phenomenon meaning that "as the temperature of the fuel rises, the proportion of neutrons captured by non-fissioning atoms increases and the rate of fission therefore tends to slow down."(10) The series of four BORAX experiments, each succeeding one of greater design complexity, ended in the summer of 1954 with the deliberate destruction of the reactor. The reactor's control rod was completely withdrawn (by a mechanical device) at high speed. The subsequent rapid rise in power caused a steam explosion that destroyed the reactor core, or fuel-rod assembly. There was no radioactive contamination of the site.

BORAX was followed by the SPERT (Special Power Excursion Reactor Tests) program, involving four different test reactors. Here again, the purpose was to obtain experimental data on "nuclear excursion behavior, reactor instability, the consequences of fuel melting and other effects representing postulated abnormal reactor behavior." (11) In 1962 one of the SPERT reactors also was deliberately destroyed in a planned experiment that resulted in minor site contamination. The SPERT tests lasted from 1954 until 1971.

By 1966, however, the LOFT facility was unfinished. Meanwhile, electric utilities had begun to buy, and reactor vendors had begun to build, a new generation of nuclear power plants in the range of 1000 megawatts. At that point AEC interest in substantial and effective emergency core cooling systems (ECCS) was aroused. Up until 1966 the AEC had required only that commercial power reactors include systems that would make up for the water lost from the reactor during normal operation (by means of steam leaks, for instance) and that would assure long-term cooling to remove decay heat. (Decay heat is the heat emitted from within the fuel rods by the radioactive byproducts resulting from the "burning" of the original nuclear fuel.) For the smaller reactors built prior to that time the prospect of an uncooled core was disturbing but not frightening. Provided that the control rods operated satisfactorily, "the situation would be expected to stabilize without breaching plant containment." (12)

But, as an AEC document states, "When plants are made larger in power, however, the various wall and surface pathways for heat dissipation generally do not increase proportionately. Thus, the above mentioned expectations would not necessarily be fulfilled for an uncooled core in a larger reactor." (13) (Emphasis in the original.)

Rising interest in emergency core cooling design and performance led to the appointment of an advisory task force within the AEC under the direction of the late Dr. William K. Ergen in 1966, and the task force completed its work the following year. The report of the task force had three chief consequences.

First, it resulted in promulgation of three general design criteria for emergency core cooling systems as well as stating their general purpose. These three criteria are found in

10 CFR 50, Appendix A. They read as follows:

> Criterion 35--Emergency Core Cooling. A system to provide abundant emergency core cooling shall be provided. The system safety function shall be to transfer heat from the reactor core following any loss of reactor coolant at a rate such that (1) fuel and clad damage that could interfere with continued effective core cooling is prevented and (2) clad metal-water reaction is limited to negligible amounts.
>
> Suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities shall be provided to assure that for onsite electric power system operation (assuming offsite electric power is not available) and for offsite electric power (assuming onsite power is not available) the system safety function can be accomplished, assuming a single failure.
>
> Criterion 36--Inspection of emergency core cooling system. The emergency core cooling system shall be designed to permit appropriate periodic inspection of important components, such as spray rings in the reactor pressure vessel, water injection nozzles, and piping, to assure the integrity and capability of the system.
>
> Criterion 37--Testing of emergency core cooling system. The emergency core cooling system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leak-tight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of the associated cooling water system.

The second consequence of the Ergen Task Force Report was a change in the LOFT experimental plan. In 1967 a decision was made to switch the focus of the test to determine whether, once the cooling fluid had been lost, an emergency core cooling system would work. Since the LOFT reactor had originally been constructed without an ECCS, a cooling system had to be added--an expensive and complicated change that deferred any LOFT tests until the mid-seventies.

The third consequence of the Ergen report was the start of work on a plan for additional experiments and theoretical analysis of safety problems. Work continued on this plan during the late sixties, and in February of 1970 the AEC published WASH-1146, the Water Reactor Safety Program Plan. During this period the AEC had somewhat informal performance standards that specified, with a degree of exactitude missing from the design criteria, just what the ECCS was supposed to do. These performance standards were used in individual licensing cases but were not published as uniform standards.

WASH-1146 led, among other things, to a series of so-called "semiscale blowdown tests" conducted by employees of Idaho Nuclear Corporation (later Aerojet Nuclear Corporation) at the Idaho testing station from November, 1970, to March, 1971. These half-dozen tests, involving electrically heated mock fuel rods nine inches long in a vessel about one foot in diameter, were to have vast repercussions. To understand why, it is necessary to discuss "blowdown" briefly.

The so-called LOCA, or loss-of-coolant accident, is what happens following a total break or a gaping rupture in one of the large pipes which convey cooling water to the reactor vessel. The amount of water ordinarily contained in the reactor vessel of a 1000 MW plant is, to understate the matter, considerable. Pressurized water reactor vessels at their largest are more than forty feet high and have an inside diameter of more than fourteen feet. Boiling water reactor vessels are even larger. Even though these vessels contain several hundred thousand gallons of water, all of it would rapidly be lost through the break because the vessel is pressurized. In short, the water would "blow out" the way air rapidly escapes from a punctured tire. This period of "blowdown," measured in seconds, results in depressurization of the vessel. At the same time (as mentioned earlier) the escaping water temporarily carries away much of the heat from the fuel rods. "Without this cooling," as AEC technical advisor Stephen H. Hanauer once explained, "the game would be lost in the first few seconds as the sensible heat transferred from the oxide (fuel) to the cladding." (14) Once the water is gone, the vessel is filled with hot steam.

Until the semiscale tests, it had always been assumed that the first stage of the emergency core cooling system would begin to work, and work effectively, during the blowdown itself. The first stage of the emergency core cooling system consists of two or more large tanks of water known as accumulators. This water is also kept under pressure, a much lower pressure than that of the reactor vessel. But during a blowdown, with pressure within the vessel subsiding rapidly, the pressure in the accumulator becomes higher than in the vessel. This higher pressure causes check valves to open, injecting water from the accumulators to the reactor vessel. So, at any rate, the theory held.

The semiscale tests, however, provided evidence suggesting that things might not work out quite that way. What the tests showed was that the high steam pressures within the reactor vessel held back the water from the accumulator before it could reach the hot reactor core, a problem called "steam binding." In addition, the tests also provided some evidence to indicate that the temperature of fuel rods might go higher than anticipated during blowdown.

What must be recognized, of course, is that the semiscale tests were in no sense realistic. They were intended to "test certain assumptions used in mathematical prediction models of some of the events which may occur during a LOCA." (15) Nonetheless, these miniature tests sent out shockwaves during the first months of 1971.

Then-AEC Chairman Glenn T. Seaborg wrote to Sen. John O.

Pastore of the Joint Committee on Atomic Energy that the experiments "have indicated that the predicted margins of ECCS performance may not be as large as those predicted previously." (16) This was the significant part of his explanation as to why the AEC was holding up licensing hearings on five nuclear plants and considering an order to curtail the power output of others.

There also were hastily called meetings involving AEC, vendor, and research laboratory personnel. One of these meetings was described in a letter, revealed at the rulemaking proceeding, from William B. Cottrell, director of the nuclear safety program at Oak Ridge National Laboratory, to Shaw's top aide, Andrew J. Pressesky:

> The meeting indicated a wide divergence of opinion because of the lack of definitive information from experimental programs which led the chairman to conclude that no one really knows what will happen in a reactor core in the event of a LOCA. Despite this fact two of the manufacturers chose to argue that the maximum temperatures [of the fuel rod cladding] should be raised from 2300 to 2700 degrees F., completely ignoring data which indicates the imprudence of such a change or, for that matter, which questions the adequacy of the existing limit." (17)

About a month before this March letter, Shaw himself had sent AEC General Manager R. E. Hollingsworth a memorandum recommending approval of a proposal for a $1.1-million blowdown test program which had come, unsolicited, from General Electric. Shaw noted that:

> Although test information is available on the response of simulated fuel pin bundles to a range of emergency coolant fuel conditions, no assurance is yet available that emergency coolant can be delivered at the rates intended and in the time period prior to clad and subsequent fuel melting due to decay heat generation. (18)

By May, Hollingsworth's understudy, AEC assistant general manager George M. Kavanagh, was up on the Hill urging the Joint Committee on Atomic Energy to add $2-million to the AEC's safety budget. The reason, said Kavanagh, was that "Some of the information needed to confirm convincingly the adequacy of such systems [emergency core cooling systems], which are intended to arrest the course of hypothetical large primary system failures, is not yet available." (19)

The findings from the Idaho semiscale tests, the minor uproar within the industry, and the ensuing newspaper stories were all stimuli to quick action on the part of a four-member senior task force which had been formed to study the ECCS question late in 1970. Hastily and under pressure, the task force came up with what would become the Interim Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Power Reactors, published in the Federal Register on June 29, 1971, and hereafter referred to as the IAC.*

It is worth quoting the criteria themselves for a particular reason. As they indicate, the AEC did not consider them necessarily permanent. The agency did recognize that under the circumstances they had to be "interim":

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*The haste is demonstrated in part by the fact that the accompanying justification was not published until December.

> A. Criteria for All Light Water Power Reactors
>
> These general requirements have been the basis of AEC safety review for some time. On the basis of today's knowledge, the performance of the emergency core cooling system is judged to be acceptable if the calculated course of the loss-of-coolant accident is limited as follows:
>
> 1. The calculated maximum fuel element cladding temperature does not exceed 2,300 degrees F. This limit has been chosen on the basis of available data on embrittlement and possible subsequent shattering of the cladding. The results of further detailed experiments could be the basis for future revision of this limit.
> 2. The amount of fuel element cladding that reacts chemically with water or steam does not exceed 1% of the total amount of cladding in the reactor.
> 3. The clad tempreature transient is terminated at a time when the core geometry is still amenable to cooling, and before the cladding is so embrittled as to fail during or after quenching.
> 4. The core temperature is reduced and decay heat is removed for an extended period of time, as required by the long-lived radioactivity remaining in the core. (20)

Along with the criteria the AEC published a substantial list of "applications" of the criteria. These required the utility company owners of nuclear power plants to analyze the performance of cooling systems in existing plants, schedule a program of improvements for the systems, augment their inspections of important pipes, pumps, and valves, and install equipment to improve water leak detection "by at least two different methods." (21)

Less than a month after publication of the IAC, AEC Chairman Glenn T. Seaborg resigned. It seemed apparent that Seaborg had had enough. A famed scientist (Nobel Prize in chemistry, 1951, along with Edwin M. McMillan, for the discovery of plutonium), Seaborg was a fish out of water, a laboratory man in an administrative job. Furthermore, the AEC had been under fire for some time for various alleged deficiencies. Seaborg had never felt quite at home in Washington.

Appointed to replace him was James R. Schlesinger, then an assistant director of the White House Office of Management and Budget (OMB). Schlesinger, 42, had three degrees in economics from Harvard. Before joining the OMB staff in 1969 he had taught economics at the University of Virginia and worked for the Rand Corporation in California. Tough but flexible, Schlesinger quickly made it apparent that he had a mandate to change the AEC's image of a cloister of scientists doing strange and incomprehensible things.

In a newspaper interview in August Schlesinger pledged that the agency "will put all the information dealing with environmental issues on the table" even where "our judgments differ from those of environmental groups." The new chairman added a caveat, however: "we're not going to freeze the production of nuclear power." (22)

A few weeks later--and much to the surprise of many within the nuclear industry who had urged the AEC to take an opposite tack--the AEC announced that it had adopted a revised statement of policy to comply with a July 23 Federal Court of Appeals decision in the so-called Calvert Cliffs, Md., case. In effect, the AEC acknowledged that radiation alone was not the only environmental impact it was required to take into account under the National Environmental Policy Act.

Then, on October 19, in Bal Harbour, Florida, Schlesinger told a stunned audience of members of the Atomic Industrial Forum and American Nuclear Society that henceforth the AEC would no longer go out of its way to protect the special interests of the nuclear industry. The AEC chairman, after noting that the Commission had "fostered and protected the nuclear industry" from its beginnings, said that times had changed: "You should not expect the Atomic Energy Commission to fight the industry's political, social, and economic battles. The AEC exists to serve the public interest." (23)

Schlesinger's declaration of independence, however, did not mean that environmentalism had gotten the upper hand. In April, 1972, for example, the chairman demonstrated his support for Milton Shaw by rejecting the notion of transferring safety research out of Shaw's division: "The proposed action," Schlesinger said, "would create a category of safety-oriented personnel and would hinder the intimate and day-to-day exchanges that they must have with those charged with reactor design and development. Such isolation would limit their effectiveness." (24)

Schlesinger's first months as chairman were marked by a rising number of challenges to AEC licensing of nuclear power plants, challenges based on the question of whether or not the Interim Acceptance Criteria were adequate to protect the public. In July the Union of Concerned Scientists had issued a study on the implications of the Idaho semiscale tests, and two national television news networks carried the UCS concerns to the public. Meanwhile, the loose coalition which would eventually be known as CNI was forming.

The new spate of legal challenges to nuclear plants prompted the AEC to respond favorably to Myron Cherry's suggestion that the Commission sponsor an open public hearing on the IAC at the national level. To the AEC a hearing looked like the best way to resolve the issue while eliminating the piecemeal challenges that were adding further delays to the already lengthy construction and licensing process for each nuclear plant. To CNI the hearing promised the opportunity of both exposing weak links in the AEC safety program and giving them national exposure.

Thus, on November 29, 1971, the AEC announced that a public rulemaking hearing would be held on emergency core cooling systems "to assist the Commission through the receipt of public views, in the formulation of generally applicable Commission regulations." (25) The announcement said that persons admitted as participants would be allowed to present oral and written evidence, question other participants, and be represented by legal counsel. In addition, a transcript of the proceeding would be made and copies of it and all exhibits would be available at the AEC's public documents room in downtown Washington.

The announcement also made it evident that the Commission had in mind an advisory, or legislative-type, hearing. There would be no discovery (a legal demand to make documents available or answer questions), interrogatories (written questions submitted to witnesses not present), subpoenas of witnesses who declined to appear, or other aspects of an adjudicatory proceeding. In other words, there would be no "trial."

Cherry then wrote the Commission asking certain "safe-guards," including the right not just to question witnesses but to cross-examine them, the right to discovery of evidence, and a free copy of the transcript. He also called on the AEC to defer any new licensing until the ECCS question had been resolved.

The AEC's response was a second announcement issued on January 7, 1972. (See Appendix D.) It was an attempt to meet Cherry halfway, and to answer with much greater definitiveness many of the major questions that had arisen in regard to witnesses, testimony, evidence, and participants.

This time interrogatories and discovery were not completely ruled out. They would be entertained if "in exceptional circumstances, the presiding board finds that there is compelling justification therefor." (26) Meanwhile, the Commission ordered all participants to "make all appropriate documents available to the extent practicable" and to list and produce on request "the documents on which they rely." (27)

The Commission also tightened the language on questioning:

> All persons admitted as participants will present their testimony under oath and will be afforded the opportunity for relevant questioning of the witnesses of other participants as may be required for full and true disclosure of the facts. (28)

The January 7 announcement was also more specific on a good many other matters. While subpoenas were still prohibited, participants could ask for specific witnesses and the presiding board, provided the request appeared to be relevant, "will encourage such witnesses to testify." (29) The presiding board, if requested by a participant, was allowed to "permit a qualified individual who has scientific or technical training or experience to participate on behalf of that participant in the examination and questioning of expert witnesses." (30) The presiding board was also given several other powers. It could rule out "duplicative, redundant or nonproductive testimony," set reasonable time limits on questioning, and "take appropriate action to control the course of the hearing." (31) What had started out as an advisory and legislative-type proceeding had taken on aspects of a trial.

The Rulemaking Hearing

A preview of what was in store took place during the prehearing conference on January 17. The one issue on which lawyers for all the participants agreed was that the site of the hearing, at AEC headquarters in the distant (from Washington) suburb of Germantown, Md., was extremely inconvenient. Anyone from out of town who flew into Washington National Airport then had to catch a cab for a twenty-mile (one-way) ride. Once again the AEC went halfway, moving the hearing to Bethesda, Md., just over the District of Columbia line, about a ten-mile ride.

Otherwise, the prehearing conference (which started at 10 a.m. and lasted until 9:47 p.m.) was thoroughly argumentative.

Cherry, for example, protested the inclusion of the Consolidated Utilities group as one of the seven major participants. It was already becoming clear that with lawyers for all seven present the stage was being set for an endless and contentious hearing. To Cherry it seemed evident that the utility companies, while doubtless interested in the proceedings, had no significant role as participants. To George Freeman of the well-known utility law firm of Hunton, Williams, Gay, and Gibson in Richmond, Virginia, and chief attorney for the Consolidated

Utilities, precisely the opposite was true:

> First of all, the utilities within their own organization and with other consultants and indeed in their relationships with the vendors are intimately associated with the subject matter. They are quite concerned about public health and safety and believe the regulations proposed here are adequate, indeed conservative. Nevertheless, their position will be basically one of supporting the regulation (i.e., the Interim Acceptance Criteria). In addition, there can be developments in the course of this proceeding which have a direct financial effect of substantial proportions on the electric utility industry and its consumers, and it is here to protect those consumers that we are also very much interested in this proceeding. (32)

Cherry's formal objection to utility participation thus was the first of tens of contested points requiring resolution by the chairman and lawyer of the Hearing Board, Nathaniel H. Goodrich. (The other two members of the Board were Dr. John H. Buck, a nuclear physicist, and Dr. Lawrence R. Quarles, a nuclear physicist and engineer.)

Goodrich, 57, had joined the AEC's Atomic Safety and Licensing Board Panel (from which three-member Atomic Safety and Licensing Boards are chosen) in 1971 after a varied career. He had been, among other things, deputy legal counsel for the Defense Department and the Federal Aviation Administration's chief attorney. From the beginning of the rulemaking proceeding, although no one ever referred to him that way, Goodrich was the chief judge. Without his tact and forbearance under numerous provocations the hearing might easily have turned into a shambles.

Goodrich over-ruled Cherry's objection to the Consolidated Utilities and was no more impressed by Westinghouse attorney Barton Z. Cowan's finickyness about the composition of the groups and individuals constituting CNI. Cowan, for instance, wanted to know whether the "Sierra Club" was the national club or one of its local branches. He was curious as to just who was "Horace E. Bailey" and other persons listed among the 54 organizations and individuals constituting CNI.

Several more substantive issues arose, however. The chief attorney for the AEC's Regulatory Staff, Thomas F. Engelhardt, said that the Staff was introducing 347 (or 616, depending on how you numbered them) exhibits, meaning "all the documents which the Staff considered in connection with its--that is, the ECCS Task Force considered, with the exception of internal working papers and the proprietary data that I previously identified."(33)

Cherry countered that:

> I don't see how we or anybody else can agree or disagree that the Regulatory Staff correctly described a document as an internal working paper unless we know what it is. (34)

When Engelhardt persisted in holding these documents back, Cherry threatened suit in federal District Court under the Freedom-of-Information Act. Engelhardt's only concession was an offer to show the "internal working papers" to the Hearing Board as "an independent arbiter." (35)

Cherry was also perturbed by the position of two of the vendors, Westinghouse and Combustion Engineering, on certain documents they alleged to be proprietary. He pointed out that the other two vendors, General Electric and Babcock and Wilcox, had produced their proprietary documents for CNI inspection.

And finally, Cherry referred to the fact that on January 10 he had written to the Commission seeking to invoke the AEC's subpoena authority for the purpose of summoning one or more members of the Commission's Advisory Committee on Reactor Safeguards (ACRS). The ACRS, composed of fifteen members appointed by the Commission to four-year terms, carried out the statutory function of providing "an independent review and advice to the Commission on the adequacy of proposed reactor safety standards and all construction permit and operating license applications for major nuclear facilities." (36)

Arguments over major questions like these consumed a vast amount of time and energy throughout the hearing. On quite a few occasions the Hearing Board, after issuing a preliminary ruling, sent disputed points up to the full Commission for a final resolution. The first of these came on the last day of the interval between the prehearing and the start of the hearing itself on January 27, when the Commission denied CNI's bid to subpoena ACRS members.

The Commission gave several reasons: that the ACRS (whose members had other jobs in the academic, scientific, or business world) was already confronted with preparing advisory reports on thirty-six pending licensing applications, that its reports were always collegial documents reflecting the collective view of the committee (although sometimes with the appended and separate views of indivisual members), and that its reports were always written documents.

The Commission added, however, that since the ECCS rule-making was a matter "of technical complexity on which there is a variance in technical opinion," it would be appropriate for the ACRS to "respond to a reasonable number of written interrogatories submitted by participants in the proceeding addressed to the views of the Committee as expressed in its letter of January 7, 1972." (37)

That letter, at least as Cherry and CNI saw it, was a work of bureaucratic ambiguity. On the one hand the ACRS said that the IAC

> ...involve a number of provisions which are clearly conservative as well as some which may not be conservative, but on balance reflect adequate conservatism for interim use with plants similar in design to those which have been reviewed for construction permits. (38)

On the other hand, however, the ACRS also said that

> Although the Interim Acceptance Criteria should be useful and helpful in the licensing process, the evaluation models prescribed in these criteria are recognized to have only limited usefulness as design tools for improving emergency core cooling systems. The nuclear industry should respond in a more direct fashion with realistic design methods, based upon additional scaled experiments and analytical studies. Design changes which would clearly eliminate any potential steam binding problem during a loss-of-coolant accident represent an example of the type of improvement considered to be of particular importance. The Committee recommends that design changes to improve ECCS capability should be sought and, to the extent practical, employed in plants for which construction permit applications are received in the future, irrespective of whether the plant design without such changes appears to meet the provisions of the Interim Acceptance Criteria. (39)

Cherry, Ford, and others within the CNI camp had already learned from other sources, including conversations with safety researchers at Oak Ridge and Aerojet, that at least some of the members of the ACRS were uneasy about the IAC. As a result, Cherry's opening statement at the hearing was a salvo of criticism:

> The AEC in its decision this morning has indicated that its decision to rule in secrecy has once again prevailed. We had offered informally to the General Counsel of the AEC to meet with the ACRS informally, to ask them what their position was on the criteria, to find out what information they could put in the hearing. All of those offers and conciliatory actions in trying to get some way for the ACRS to come down from its ivory tower were rejected. It

> is our position that the denial of subpoena and the way these hearings are going indicates the Commission is not interested in the free and open hearing, but it is interested in the public image-making which has the trappings of a free hearing...(40)

Thus, as the hearing got underway with the summoning of twenty-one members of the AEC's Regulatory Staff to the witness stand, an atmosphere of trench warfare settled over the room. Within a few days both Ford and CNI attorney Anthony Z. Roisman, in Washington, and Cherry and David D. Comey of Businessmen for the Public Interest, in Chicago, held press conferences accusing the AEC of dragging its feet on safety and "suppressing crucial information." (41)

In fact, that could not be proved until CNI prepared its interrogatories and saw the responses to them from the ACRS. Nor did Cherry or anyone else from CNI mention that on the day before Cherry's press conference the Commission had over-ruled the Hearing Board and ordered disclosure of fifty-seven of the sixty-one internal Regulatory Staff documents that Englehardt had attempted to shield. As internal communications, the Commission said, the documents were obviously exempt from disclosure under the Freedom-of-Information Act. Nonetheless, it was releasing all but four of the sixty-one on grounds that "they may provide a basis for fuller exposition of the staff testimony in the instant proceeding." (42) Of the four still withheld, one applied to a personnel matter, clearly privileged, and another to naval nuclear reactors, which the Commission believed should be held back on the grounds of national security. Of the final two, one was the minutes of a Commission meeting on the ECCS interim criteria, for which, said the AEC, there was "no overriding public interest requiring...disclosure." (43) The other, the Commission said, was a staff memo concerning review of the IAC by the ACRS, whose views could be established through interrogatories.

By February 23 it had been clear for some time that RM-50-1 was going to last longer than anyone, with the possible exception of CNI, had expected. In an order of that date the Commission noted, with considerable accuracy, that CNI's questioning of the Regulatory Staff witnesses "had been directed not to the technical validity of the criteria themselves but rather to their history, internal deliberations leading to their adoption on an interim basis, and the background of the development of the staff's testimony." (44) The Commission urged the participants to focus on the subject matter at hand.

Myron Cherry, a 33-year-old Chicago lawyer who had taken part in many AEC licensing challenges, was regarded by many as the rulemaking's enfant terrible. There was, for instance, this exchange, with Milton Shaw on the stand:

Cherry: My question is, based on his expertise and based on his understanding of the complex subject we're discussing here, whether or not it is his judgement that his testimony is relevant or necessary to understanding of the complex matter that we are discussing here, or whether it is useless. I mean, I'm trying to figure out what his expertise is and where it fits in. Perhaps I can ask it another way.

Chairman Goodrich: Yor're getting on to making a speech, I think. You might properly ask some questions--Mr. Shaw, one of the questions involved in what Mr. Cherry has just been stating is whether you think what you have to say here is relevant to the validity of the Interim Acceptance Criteria? Could you answer that simple question?

The Witness: Yes, Sir. I believe my testimony is relevant to the rulemaking hearing.

Chairman Goodrich: Fine (45)

As it turned out, however, no participant encountered more strenuous objections than Cherry's technical interrogator during most of the hearing, Daniel F. Ford of the Union of Concerned Scientists. Only 24, Ford had graduated from Harvard in 1970 with a degree in economics and then joined the research staff of the Harvard economics department.

Before being admitted as a participant, Ford was questioned extensively by Board members Buck and Quarles and by Westinghouse attorney Cowan. He admitted that he had taken no courses in chemistry, physics, or the natural sciences, that he had no formal course-work in thermodynamics, heat transfer or fluid mechanics, that he had no training in neutron kinetics, hydrodynamics, or stress analysis, among others. All he could point to was a year of intensive study of emergency core cooling systems--immersion in the literature, discussions with researchers at Oak Ridge and Aerojet, and service as a technical intervenor in the Pilgrim licensing case. Despite reasonably knowledgeable answers to questions about eutectics and the so-called Liedenfrost Forces, his knowledge was deemed inadequate by Buck, Quarles, and Cowan, the latter of whom commented that "the whole record this morning and early afternoon indicates grave doubts, at the very least, on the qualifications of Mr. Ford to conduct the examination under Rule Seven..." (46)

But Engelhardt, representing the AEC Regulatory Staff, did not object to Ford's participation "on a very definite, limited, provisional basis" until it could be determined "whether he can indeed make a contribution to the record of this hearing." (47) In the end Goodrich allowed Ford to participate after noting that the hearing's purpose was to get information into the record and that if Ford had no technical expertise he did have "a familiarity of issues that persons wish to present to this Board in this hearing." (48)

A few weeks later Shaw and Ford clashed during cross-examination of the RDT Director on his written testimony for the hearing. Among the interchanges was this one:

> Ford: ...Can you tell me, Mr. Shaw, is the Groeneweld correlation a steady-state or a transient heat transfer correlation?
>
> Shaw: I would prefer to cover this as I indicated before. [That is, by consulting documents before answering.]
>
> Ford: Did you ever know whether it was a steady-state or a transient heat transfer correlation?
>
> Shaw: I cannot recall whether I ever addressed this question in those terms.
>
> Ford: Have you ever read the [AEC report] referenced in the interim policy statement as the source of the Groeneweld correlation?
>
> Shaw: I cannot recall whether I ever read that document... (49)

This, and several similar exchanges, led *Nucleonics Week*, a trade publication, to assert that "Milton Shaw, director of the AEC Division of Reactor Development and Technology and thus head of the government's civilian nuclear power program, was verbally floored by the National Intervenors last week... In a theatrical day of questioning, Shaw simply was unable to answer direct questions about his own written testimony, although he maintained over and over again that he was indeed the author of that testimony." (50)

In the months that followed Ford and Cherry were able to demonstrate the existence of serious doubt about the adequacy of the IAC among researchers at Oak Ridge and Aerojet, where most of the AEC's safety research was carried out. Those doubts also extended to a few members of the Regulatory Staff.

Among the fifty-seven internal memoranda which CNI had obtained after the full Commission over-ruled the Hearing Board was one that had been sent to the ECCS Task Force by Morris Rosen and Robert J. Colmar on June 1, 1971. Rosen headed the Regulatory Staff section responsible for conducting technical safety reviews of the nuclear, thermal, and hydraulic aspects of reactor safety, and Colmar was his assistant. Together they were responsible for day-to-day evaluation of emergency core cooling systems.

Their memo, sent less than a month before publication of the IAC, took strenuous exception to the Task Force belief that the numerous computer codes used to predict various physical phenomena within the reactor during and after a loss-of-coolant accident were "definitive in terms of describing the course of an accident to a substantive degree..."(51)

Referring to the Task Force attempt to devise a general "prescription" that could be applied to the codes used by each of the reactor manufacturers, Rosen and Colmar said:

> We have consistently pointed out that this approach is too limited for the task at hand...we believe...that this approach will not be technically defensible in the final

> analysis as a basis for selectively de-rating multi-million dollar power plants on a plant-by-plant basis should code-generated numbers indicate such a course...We believe that the consummate message in the accumulated code outputs is that the system performance cannot be defined with sufficient assurance to provide a clear basis for licensing.(52)

Rosen and Colmar were later allowed to testify at the hearing after L. Manning Muntzing, the AEC's new Director of Regulation, over-ruled a lower-level decision to keep them away from the witness stand. Once there, Rosen provided a balanced overview of the ECCS problem. He said that during the previous five years there had been significant improvements in both the formulation of computer codes and the design of emergency core cooling systems. He pointed out that there were programs underway or being considered that would significantly improve the analytical processes. And he remarked that under ordinary circumstances the Regulatory Staff heard the opinions of everyone who had a contribution to make before arriving at its own opinion, which was then reviewed by the ACRS.

But the problem, Rosen said, was that "present knowledge is surely incomplete; there is an obvious need for more code development and experimentation to verify the various aspects of current and possible future ECCS designs."(53) That, he said, was not his opinion alone. He referred to Colmar's testimony as supporting one of the points made by their June 1 memo, namely that "many knowledgeable individuals involved in the analytical and experimental aspects of the LOCA problem on a first-hand basis substantially supported the reservations we had concerning the analytical tools used to evaluate the ECCS performance and the ability to adequately understand the LOCA." (54)

That was still the case now--ten months later--Rosen said. Further, he pointed out that during that interval the ACRS had "strongly recommended both stepped-up research and the need for work on new ECCS designs." (55) Given the ACRS views and the testimony at the hearing, Rosen said, he still concluded that the use of existing evaluation models to determine maximum power levels for nuclear power plants "cannot be technically supported as giving either uniform, consistent, or conservative results."(56)

Many, if not all, of the "knowledgeable individuals" referred to by Rosen were researchers at Aerojet in Idaho under the direction of George Brockett. Brockett was "one of the leading experts in this country in emergency core cooling, in my opinion, if not the leading expert," Rosen said. (57)

When Brockett himself appeared as a witness, it was evident that he was still concerned about the steam binding problem revealed by the semiscale blowdown tests. The short portion of his testimony quoted below also gives some indication of the complexity of the questions that arise in attempts to analyze, by mathematical means, the physical phenomena involved during loss-of-coolant accidents:

> ...There are several things that go into this on the assumptions relating to pump resistance, to loop resistance, quality from the core, secondary heat--secondary system heat put into the effluent [water] coming out of the core and heading for the break, line plugging from delivering of emergency core cooling. This is an extremely complex situation, and I don't feel that we have unravelled well enough the influence of each of these things in the steam binding process to assure ourselves that we can quantify that process.(61)

Steam binding was just one of the problems that concerned researchers at Aerojet, however. CNI introduced into evidence a list of proposed analytical and experimental programs that Aerojet, at the request of Shaw's division, had prepared in August of 1971. Listed, along with steam binding, were twenty-seven other research projects dealing with loss of coolant and emergency core cooling system operation. Further work was needed, in Aerojet's view, due to the fact that for one aspect of emergency core cooling after another current knowledge was "incomplete," "inadequate," "uncertain," "inaccurate," and so on. In terms of urgency, two of the projects were rated "low" and five were rated "medium." The urgency of the others was held to be "high" or "very high."

While there were some other witnesses who expressed doubts or reservations in connection with emergency core cooling systems, none probably made a greater impact during the hearing than Philip L. Rittenhouse of Oak Ridge National Laboratory, an acknowledged expert on cladding embrittlement and flow blockage, meaning blockage of cooling water resulting from clad deformation.

Rittenhouse had serious reservations about the state of knowledge in relation to flow blockage:

> **Rittenhouse:** I have always had the concern that flow blockage would be a problem in a reactor in the case of a loss-of-coolant accident.
>
> **Ford:** Do you believe that flow blockage arising during a loss-of-coolant accident has the potential to cancel the postulated effectiveness of the emergency core cooling system?
>
> **Rittenhouse:** I believe there is not enough information known about the effect of flow blockage to make a decision one way or the other. (58)

And later:

> **Ford:** By saying that you don't know whether it would or will, do you mean that research and analysis that has been carried on to date has not resolved the question as to whether flow blockage might prevent transient turn-around?
>
> **Rittenhouse:** It certainly has not in my mind. (59)

Rittenhouse also was skeptical about the Interim Acceptance Criteria's establishment of 2300 degrees F. as a maximum temperature for the cladding:

> **Ford:** Are you saying that the Staff testimony, both written and oral, is not a sufficient technical basis to support a 2300 degree maximum clad temperature limit with respect to embrittlement?
>
> **Rittenhouse:** The Staff testimony does not to my mind support--well, cannot be used in any case to support any temperature limit. (60)

During his testimony Rittenhouse also suggested that the IAC were inadequate because they did not pay greater attention to maintaining the integrity of the cladding. Setting a temperature limit for the cladding was not in itself enough. What was equally important was the time period during which the cladding was heating up due to the absence of cooling water. If the cladding was allowed to "cook" long enough in its steamy atmosphere following the loss of coolant it might fail at temperature a good deal lower than the allowed maximum.

At the end of his testimony, like Rosen before him, Rittenhouse pointed out that he was not alone in his concern. He listed for the record the names of twenty-eight other persons, beginning with many of his co-workers at Oak Ridge, whose reservations about cooling system performance had influenced his own views. "These people have too many reservations...shared too generally for me to pass off," he said. (62)

The questions raised by witnesses from Oak Ridge and Aerojet were disturbing. What made them more so was evidence that the channels of information between the laboratories and the AEC sometimes worked in a strange fashion.

CNI introduced into evidence, for example, the text of a letter (with its supporting documents) that had been sent to Muntzing at the AEC by Cottrell of Oak Ridge in December, 197[illegible]. Cottrell summed up the essence of the letter this way:

> To summarize what follows herein, we are not certain that the interim criteria for ECCS adopted by the AEC will, as stated in the Federal Register, "provide reasonable assurance that such systems will be effective in the unlikely event of a loss-of-coolant accident." (63)

The thirty-page attachment listed the concerns of Oak Ridge researchers regarding emergency core cooling systems, which led Cottrell to say that the laboratory

> ...would welcome the opportunity to work with others in developing interim criteria based on our zero ductility concept of embrittlement and on our best estimates of emergency coolant flow blockage by fuel rod swelling and its effect on cooling performance. Final criteria cannot be developed until more experimental evidence becomes available on these and other aspects of the ECCS situation... (64)

After the letter was received at the AEC one of Cottrell's superiors called Muntzing asking him to return it, claiming that it was only a "draft." During cross-examination, however, Cottrell asserted that the letter was not a draft and that it did represent the views of the Oak Ridge staff. The reason for withdrawal of the letter appears to be that Cottrell's superiors were concerned about the possible institutional ramifications of the letter. Dependent on the AEC for many of its research contracts, Oak Ridge did not want to look as if it were pushing new research for its own benefit or being overly critical of the AEC.

A different way of keeping things quiet was revealed by J. Curtis Haire, manager of the nuclear safety program at Aerojet.

While on the witness stand Haire testified that Aerojet's reports went to Shaw's office for review before publication. As a result the reports on the semiscale blowdown tests had been heavily "edited," eliminating virtually any discussions on the relationship of these tests to the effectiveness of the ECCS. Cherry subsequently asked Shaw if Aerojet reports were being censored. Shaw made no bones about admitting that the review process could be called that.

> I think it is a basic requirement that reports that are issued by people who are working for us have in them factual information--they are not speculative, in the sense of not referring to things they should not. (65)

But Haire didn't see it quite that way. When he returned to the stand he said that he didn't think RDT review was a matter of disagreement over technical matters. In his view it was a public relations problem. If Aerojet reports said too much about safety Shaw's division might have to answer a lot of annoying questions. Haire said that he hadn't come up with that view himself. He had picked up the idea through discussions with Pressesky, Shaw's deputy.

The rift between the AEC and its chief safety research laboratories was exposed with greater clarity in a February, 1972, letter from Oak Ridge director Alvin M. Weinberg to Chairman Schlesinger:

> Dear Jim:
>
> When you called me in Florida you asked me

to make clear to our people that, when they testify at the ECCS hearings, they are to present their views fully and without reservation. I have conveyed this message to Messrs. Rittenhouse, Trauger, Cottrell, (and others). That some of the testimony may prove to be in conflict with the interim criteria will not prevent them from presenting their data and conclusions as honestly and fairly as they can.

With respect to the criteria themselves, I have only one point to make. As an old-timer who grew up in this business before the computing machine dominated it so completely, I have a basic distrust of very elaborate calculations of complex situations, especially where the calculations have not been checked by full-scale experiments. As you know, much of our trust in the ECCS depends on the reliability of complex codes.

It seems to me--when the consequences of failure are serious--then the ability of the codes to arrive at a conservative prediction must be verified in experiments of complexity and scale approaching those of the system being calculated. I therefore believe that serious consideration should be given first to cross-checking different codes and then to verifying ECCS computations by experiments on large scale and, if necessary, on full scale. This is expensive, but there is precedent for such experimentation--for example, in the full-scale tests on COMET and on nuclear weapons.

I have one other point. I believe [Oak Ridge] and the other National Laboratories should have been as intimately involved in the preparation of the interim criteria as we have since been in the preparation of AEC testimony for the hearings. That we were not so involved reflects a deficiency in the relation between Laboratory and Commission that troubles me...[The Laboratories] must be called upon fully by the

> Commission even when this may uncover differences of opinion between the Laboratories and the staff of the Commission... I can guarantee that our opinion, if solicited, will be both honest and responsible. (66)

The testimony and the exhibits, the doubts and reservations expressed during the first several months of RM-50-1 all were to have an impact. In October, 1972, Director of Regulation Muntzing told a press conference that the Regulatory Staff was contemplating a "more conservative" stance in regard to the ECCS criteria. (67) In Supplemental Testimony filed on October 26, the Staff said that while the rulemaking proceeding was still incomplete a review of the record so far suggested "the desirability of considering changes in certain parts of the general criteria or the evaluation models contained in the Commission's Interim Policy Statement of June, 1971." (68) Many of these changes, it should be noted, had little or no relationship to CNI's views.

The Supplemental Testimony's introduction went on to say that there were two chief differences between it and the Staff's earlier testimony. The first was a trend toward "expansion of case-by-case review in the establishment of certain parameters and variables." (69)

The second, and more prominent, trend was

> toward the direction that has been called stricter, or more conservative. New experimental data and additional calculational results have in several cases suggested the

> need for additional conservatisms; see Sections 7.0, 9.0, 14.0, 17.0, 18.0, 19.0, and 22.0. Additionally, reevaluation of information previously available has resulted in recognition of additional phenomena or viewpoints whose inclusion in evaluations would cause changes. Examples are in Sections 4.0, 5.0, 6.0, 10.0, 11.0, 12.0, 13.0, 14.0, 20.0, and 22.0. (70)

As 1972 drew to a close the hearing moved toward the end of the first phase of RM-50-1, the safety phase. There was a second phase to go through, the environmental phase initiated by publication in December of the Regulatory Staff's Draft Environmental Statement on the criteria for emergency core cooling systems, in compliance with the National Environmental Protection Act (NEPA). Six federal agencies (the Departments of Agriculture, Interior, Commerce, and Health, Education, and Welfare, the Environmental Protection Agency, and the Federal Power Commission) were asked to comment on the draft, as were the participants in RM-50-1.

The participants had a good deal more to say about the draft than the federal agencies. As might be expected, their written statements* were of a piece with their testimony during the safety phase. The vendors and utility companies, speaking generally, held that the Interim Acceptance Criteria were more than adequate to protect the environment. In regard to the cost/benefit equation applicable to environmental matters any benefit would be negligible, while the costs (in terms of nuclear power plant modification, reductions in nuclear power plant output, etc.) might be considerable. But CNI concluded that

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*See Final Environmental Statement Concerning Proposed Rule-Making Action: Acceptance Criteria for Emergency Core Cooling Systems for Light-Water-Cooled Nuclear Power Reactors, Volume 2.

> ...the AEC has responded to the mandate of NEPA in typical fashion by ignoring substantial issues and then so structuring its draft and final statement that an honest analysis of cost-benefit will not be made. The law is quite clear, as evidenced by the Greene County case and others that such procedure is just plain illegal. (71)

Time was allocated for cross-examination on the Final Environmental Draft, published May 9, 1973, but CNI declined to participate for several reasons: the hearing would be "severely limited" because steam generator tube failures, fuel densification, and other technical matters could not be discussed, the probability of LOCA's could be discussed but not the possible consequences of an ECCS failure, the AEC was already moving ahead anyway on licensing instead of waiting for a verdict in RM-50-1, and the Hearing Board had rejected a substantial part of CNI's Direct environmental testimony. (72)

The Board had held that Chapter 2 of that CNI testimony was inadmissable because "it contains a very generalized discussion, rather than the specification of mechanisms that might cause a LOCA. It also discusses a variety of failures or accidents other than those that are involved primarily in a LOCA, which as a result are essentially irrevelant..." (73) CNI was not alone.

The Board also disallowed the questions which Consolidated Utilities had planned to ask CNI, saying they were "not specific," and allowed General Electric only six of the nineteen questions it had planned to ask on CNI's testimony. (74)

On July 25, 1973, at 11:30 a.m., the long proceeding before the Hearing Board ended. All that remained was the single day of argument before the full Commission (discussed in this paper's Introduction) and the final decision itself. CNI, as mentioned earlier, lambasted the decision, even though it was obviously influenced by the Rittenhouse testimony.

The Interim Acceptance Criteria had set a maximum allowable temperature limit of 2300 degrees F. for the cladding. The new criteria lowered that to 2200 degrees F. and, in addition, set a limit of 17 percent on the maximum allowable oxidation (or rusting) of the cladding. The other three criteria (there had been no argument over the second and fourth) were left essentially unchanged.

There were also some changes in the evaluation models that accorded with CNI's views:

> ...swelling and bursting of the cladding must now be taken into consideration when they are calculated to occur, and that the maximum temperature and oxidation criteria must be applied to the region of clad swelling or bursting when the maximum temperature and ocidation are calculated to occur there. Another important change is the requirement that, in the steady state operation just before the accident, the thermal conductance of the gap between the fuel pellets

> and the cladding should be calculated taking into consideration any increase in gap dimensions resulting from such phenomena as fuel densification, and should also consider the effects of the presence of fission gases. When these effects are taken into consideration a higher stored energy may be calculated. (75)

CNI's appeal of the final decision was dismissed by the U.S. Court of Appeals for the District of Columbia on September 10, 1974. The court ruled that the appeal "had not been timely filed..." (76) In other words, it was late. Given CNI's continuing criticism of the AEC and its professed desire to protect the public, its late filing is difficult to understand. The reason for that, Ford said recently, was that CNI remained undecided on whether to appeal up until the last minute. On the one hand, he said, the intervenors were eager to do so, but on the other they were aware of the traditional deference granted to federal administrative agencies by the courts. The attitude that prevailed in federal courts a few years ago, but which has now begun to change, was that "we [meaning the courts] don't have the technical expertise to make a judgment," Ford said. (77)

Rulemaking as Politics

During RM-50-1 the Hearing Board issued nearly 100 written orders, many of them accompanied by lengthy written opinions. Numerous other oral orders can be found embodied throughout the transcript. None of the written orders better demonstrates the procedural problems that evolved during this experiment in rulemaking than the one issued on May 17, 1972, under the title "Procedural Rule on Objections to Questioning."

When the Commission issued its list of detailed procedures prior to the start of the hearing in January no mention was made of objections to questioning. Given the importance of the subject matter and the large number of lawyers present, however, it was inevitable that sooner or later the lawyers would begin objecting to questions asked of their clients by counsel for other participants. These objections, along with frequent requests for clarification and comments on the questioning "contributed to disruption and confusion in the hearing, prolixness of the record, some apparent protraction of time required for the proceeding, and conceivably some effect on the thinking of witnesses prior to their ability to reply." (78) Ultimately, in fact, there came a time when a sizable portion of the hearing was devoted to arguments over whether attorneys for the participants had the "right" to object. It was obvious that the hearing threatened to evolve into eternal wrangling. By the time the Board issued its ruling the hearing had already lasted fifty-nine days and generated a transcript of more than 12,000 pages. Yet vast portions had nothing to do with the subject, the adequacy of AEC performance criteria for emergency core cooling systems.

The Board was not about to grant any "right" to the making of objections, noting that

> The insistance on the "right" to object prior to answer by the witness relies on traditional courtroom litigation and other types of fully adjudicatory adversary proceedings, in disregard of the fact that the technical rules of evidence and procedure do not apply in the same rigid fashion in administrative proceedings. (79)

But since the Commission had made clear from the beginning that RM-50-1 was experimental in nature, and had given the Hearing Board some latitude as to procedural matters, the Board decided to admit objections based on the relevance of the question as well as "any appropriate objection." (80) But requests for clarification, comments, statements, or motions with respect to questions were to be deferred until witnesses completed their answers.

In view of the fact that the rest of the transcript amounted to "only" 10,000 pages or so, one might be tempted to conclude that the Board's ruling had a definite impact. On the other hand, it should not be forgotten that CNI declined to cross-examine during the environmental phase of the hearing.

In any case the Board ruling was obviously called for. By the time it was issued there had been repeated flare-ups involving the Board and the lawyers. This is what happened at one point, as Cherry attempted to obtain certain documents:

Cherry: What I said I did not want--and I don't want--are documents that don't have any substance, or relate to the emergency core cooling system. But if a report has been prepared for GE in-house saying "keep away from this, it's pretty bad," whether that's formal, informal, draft or anything else, I want it.

Goodrich: Certainly, information that was not given to or discussed by the vendor organizations cannot be said to have been involved in the Commission's evaluation of what ought to go into the criteria.

Cherry: May I?

Goodrich: So I would rule them, for the time being, out of the scope of this proceeding.

Cherry: That's the very reason, sir, that--and I wanted to stop you at that point to interrupt--

Goodrich: You did.

Cowan: We again demand the right to be heard.

Cherry: Mr. Cowan, I will support your right to be heard.

Goodrich: Don't worry about Mr. Cowan. He won't worry about you, and--

Cowan: I want the record to show what is clearly happening.

Goodrich: Please, Mr. Cowan. Stay calm; we have a long day here, even though it ends at five o'clock.

Cowan: Mr. Chairman, I think the procedure is abominable. (81)

Frequent episodes like these throughout the ECCS hearing prompted L. Manning Muntzing* during a recent conversation to say that "there wasn't really any difference at all" between RM-50-1 and a court trial. (82) The question that then arises is, should there have been?

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*Now in private law practice in Washington.

Steven Ebbin and Raphael Kasper, in their book Citizen Groups and the Nuclear Power Controversy: Uses of Scientific and Technological Information, suggest that the answer should be yes. After investigating the ECCS rulemaking (rather, the substantial part of it which had taken place before their writing deadline) and several individual licensing cases held before AEC Atomic Safety and Licensing Boards, Ebbin and Kasper conclude that

> The current system of ASLB hearings presents the observer with the irony of a group of lawyers taking part in hearings being run, ostensibly, to resolve scientific and technical issues, at least in part. It is somewhat bizarre to watch lawyers seeking to establish an evidentiary record on scientific matters through their questioning on issues they evidently understand barely, if at all. The result is that undue attention is paid to points which have little or no relationship to the issues at hand. Hearings are marked by frequent interventions on procedural matters and other areas in which lawyers are evidently more comfortable. Long periods of delay result from legal gymnastics and the procedural wrangling obfuscates the essential issues at hand. (83)

To bolster their view, Ebbin and Kasper quote from a report of an ad hoc lawyers' group to the Atomic Industrial Forum:

> ...safety issues are...highly technical and traditional rules of evidence and of trial procedure become totally incongruous when applied to such issues as the adequacy of engineered safeguard

> systems. The rational approach here is much more akin to the techniques followed by scientific or engineering review panels than to the mechanics of trial procedure. (84)

They also quote Arthur Murphy, who has been a member of Safety and Licensing Boards, Louis H. Mayo, and an unnamed attorney for Dow Chemical Company in the Midland licensing case. Their respective quotes follow.

> Where issues involve scientific data, written evidence rather than oral testimony should be preferred. No one who has observed an AEC licensing proceeding can doubt that examining a complex technical subject by means of oral testimony is both difficult and time consuming. (85)

> ...(S)cientific method is aimed primarily towards enlightenment, i.e., the production of knowledge, while an adversarial system is directed primarily toward power, i.e., the assertion of claims and the influencing of decision outcomes. (86)

> ...the attorney is by definition and intention an advocate under our adversary system of law, He is paid to speak for his client, within the bounds of ethics and law. (87) (Emphasis in original.)

The "difference in the goals of scientific method and the adversary system" lead Ebbin and Kasper to the conclusion that the two should be divorced in the case of disputes over individual nuclear power plants or over such things common to all plants as emergency core cooling systems. (88) They suggest that scientific and technical issues could be "resolved (or at least discussed and described)" by "teams of independent scientists (i.e., those with no direct stake in the outcome of an assessment)." (89) The result would be that "the forum for public participation would have as a basis an impartial evaluation of the impacts of nuclear power plants which could then be weighed by means of an adversary process." (90) The result would be that

> The fiction of attempting to resolve scientific issues through courtroom techniques and lawyers' strategies would be removed. Questions of the motives of scientists and the deliberate concealment of evidence would be eliminated. The entire proceeding would then approach the dual goals of arriving at scientific and technical determinations and allowing meaningful public participation in ways more likely to succeed than the present method of allowing an adjudicatory proceeding to do both simultaneously. (91)

While the Ebbin/Kasper argument looks nice and neat at first glance, several objections might be raised.

First, it ignores the obvious. In a scientific and technological age like our own there is no way in which scientific and technological questions can be separated from politics. The acquisition of scientific knowledge and technological improvement does not take place in a vacuum. It takes place in a real world where science and technology are sources of power and influence. As a result, it is fanciful to suppose that somewhere in some laboratory are some white-coated scientists who are going to provide thoroughly impartial answers to complex technological questions (for example, on the workings of the emergency core cooling system). But if there were, there obviously would be no need for public participation.

What Ebbin/Kasper offer comes close to being the same licensing process that has aggravated the opponents of nuclear power plants from the beginning, an aggravation that the Commission sought to recognize in its assertion that its decision on the criteria for emergency core cooling systems would be based on the rulemaking record. That is, the decision would be made after public participation, not before. From the very beginning the argument has been over whether scientists alone, regardless of how objective and decent they may be, should be entrusted with making decisions that have vast effects, potential or actual, on the public. What the ad hoc lawyers' group to the Atomic Industrial Forum and Arthur Murphy are saying, in the quotations above, is that only the opinions of the scientists should count. That may be, as the ad hoc group suggests, the "rational approach," but it takes into account neither that portion of the public willing to accept the potential risks of nuclear power plants nor that portion of the public so concerned about risks that they would halt any future construction of nuclear plants. Either point of view may--and obviously often does--seem irrational to holders of the opposite opinion, but one purpose of the democratic form of government is to ensure that all points of view are expressed.

It is, furthermore, inconsistent of Ebbin and Kasper to denigrate the adjudicatory (and hence adversary) process if their goal is scientific truth. Their mistake, following Mayo, is to focus on the process without recognizing that the process is the prelude to a verdict stating what the truth of the matter is. Was the accused innocent or guilty? Did the corporation break the antitrust laws or did it not? While the adversaries in a judicial proceeding do assert claims, as Mayo says, and attempt to influence the outcome of decisions, neither of the adversary parties is entrusted with making the final judgment as to the truth of the situation.

What bothers Ebbin and Kasper, it seems, is the messiness and the "irrationality" of the adversary process. In their account of the ECCS case, for example, they emphasize the view of other participants that Cherry's behavior was counterproductive and needlessly contentious. (92) Certainly it is true that on far too many occasions Cherry was guilty of such things as ad hominem remarks, unjustified accusations, intemperate language, and so on.

But Cherry's faults do not obscure the fact that he and his associates were concerned with what they saw as a perversion of the scientific process. Their goal was to show that the concerns of the scientists at Oak Ridge and Aerojet about emergency core cooling systems had been pushed into the shade by an AEC/Vendor/Utility complex imbued with mundane goals for which they were willing to risk to an intolerable degree the safety of the American public. What CNI was arguing, in short, was that the atomic industrial complex was no more willing to listen to the "bad news" emanating from Oak Ridge and Idaho than Johnson, Rusk, McNamara, and Bundy were willing to listen to the bad news coming to them from the jungles and rice paddies and highlands of Vietnam. In both cases the powers-that-be had been told the bad news but chose to ignore it, being convinced that they knew better. Thus, the need to keep dissent under cover. Consider part of a June, 1970, letter from Cottrell of Oak Ridge to Shaw's aide, Pressesky. It begins with a discussion of a speech that had been given by then-AEC Commissioner Theos J. Thompson:

> On this subject, he [Thompson] made the observation that the nuclear community should present a united front to better assure success of our mutual objective of safe economic nuclear power, and that one of the more effective ways of doing so is by fully exploring our ideas and criticisms with the commission itself and not in the public press. I most certainly would do that, in any event, as this letter exemplifies. (93)

Cottrell then goes to express his concerns:

> It is not the purpose of this letter to discuss the pros and cons of this debate [i.e., regulation versus promotion]; however, it is the point of this letter to direct your attention to several important relevant facts concerning safety research:
>
> 1. The Commission's position in its support of nuclear safety research is seriously

> compromised by relegating significant portions of the nuclear safety research and development program to the same industry it would license.
>
> 2. There are several instances within our experience where it has largely been through the existence of a nuclear safety research and development program independent of the nuclear industry that information less optimistic than that advanced by industry has been made known.
> 3. In addition to the implementation of experimental research and development projects, of immediate concern, national laboratories are ideally suited to work on long-term problems such as the advanced safety evaluation techniques and assessment of operating experience. (94)

Cottrell concludes the letter by pointing out that he is not arguing that anyone has done anything illegal, but that it is human nature for self-interest to interfere with objectivity:

> In connection with the above observations, I should make it unequivocally clear that nothing that I have to say here implies an illegal action on the part of the parties involved, but rather that the interests of the parties involved inherently induce them to search for different ends, to look in different areas, and even to interpret the same facts differently. In the final analysis the dilemma, inherent in situations where conflicts of interest abound, can only be cured by removing the conflict and providing in its stead an adequate system of checks and balances. Recent experience of other government agencies, as in the control of agricultural chemicals, pharmaceuticals, and mining, to name a few, have demonstrated the folly of depending upon industry to provide the basis for regulatory judgments. (95)

In view of the Shaw memorandum to General Manager Hollingsworth, quoted earlier, urging approval of an unsolicited research proposal from General Electric early in 1971, Cottrell's letter apparently was not taken too seriously, at least in the RDT Division. But his letter, some financial short-changing of the AEC safety research effort in the late sixties, and other incidents lend some weight to the contention that the AEC, the vendors, and the utilities had developed a cozy relationship among themselves.

Consider, for instance, the testimony of Rosen of the Regulatory Staff in regard to the nuclear reactors built by Combustion Engineering. The interim criteria evaluation models prohibited steam flow in intact loops (pipes) during the time when accumulators are injecting emergency cooling water after a LOCA, a problem known as steam plugging. This presented a problem for Combustion's designs. As a result--and based "on recent C-E [Combustion Engineering] tests to justify intact loop steam venting for their reactor designs"--the AEC approved Combustion's evaluation model without the plugging restriction. The change, said Rosen

> Perhaps...can be viewed as a reasonable change as a result of improved knowledge, it only being fortuitous that the removal of this restriction was urgently required to make C-E plants licensable at full power. Other vendors with higher pressure accumulators are not significantly affected by the plugging assumption and thus do not need, and have not requested, the removal of this restriction from their evaluation models. (96)

Early in January, 1972, just before the start of the ECCS rulemaking proceeding, Rosen was given a new job that removed him from day-to-day analysis of emergency core cooling systems. He commented that, while his new assignment could be seen as a promotion, "it's the sort of thing that, if it happened very often in an organization, you'd have to wonder." (97)

And yet if CNI's charges and evidence are examined from a critical viewpoint, one is tempted to suggest that CNI got more out of its limited repertoire of weapons than warranted--in short, that CNI's achievements (Milton Shaw's dismissal, the tightening of the final performance criteria, the eventual separation of the AEC into NRC and ERDA) were in good part a triumph of public relations.

CNI's spokesmen were often quick to gibe at the AEC for its reluctance to dwell on the worst potential consequences of an ECCS failure in the event of a LOCA, namely, a nuclear catastrophe of some sort involving widespread deaths and injuries. Yet one cannot read CNI materials without being struck by the intervenors' willingness to reach those consequences so quickly and dwell on them.

If this seems unfair and ad hominem, it still can be contended that CNI neglected to make an objective analysis of the reasons for the difference in viewpoints between that of the AEC and the national laboratories. CNI saw that difference as a neglect of vital safety research by the AEC and therefore held the AEC culpable. Yet it is clearly arguable that what was at stake was not safety but differing estimates of the importance of emergency core cooling systems in a carefully viewed engineering context.

CNI exerted considerable effort in pushing the notion that emergency core cooling systems were all that stood between normal operation of nuclear power plants and Armageddon. Whether this was done simply as a rhetorical device or out of genuine concern, it conveys a technological innocence that distorts serious issues. What CNI saw as Shaw's, and the AEC's, neglect of safety, was instead a belief that "fail-safe" devices like emergency core cooling systems, although not to be neglected, were not the place of greatest focus if one is truly concerned about safety. In short, if you are truly concerned about safety you pay far more attention to the plane than to the parachute.

Shaw, to use the handiest example, was an engineer whose basic philosophy was that the best way to achieve safety in nuclear power plants was to design them right and build them right the first time. Once that was done the next task was to keep them running right through proper inspection and maintenance.

All this requires a vast amount of attention to such thoroughly mundane matters as engineering standards, pump manufacturing, metals specifications, quality controls, stress analysis, training of plant technicians, and literally thousands of other details that compose, in general terms, what the AEC frequently refers to as the first level of its "defense-in-depth" concept. WASH-1250, the safety of nuclear power reactors and related facilities states the first level of safety this way:

> Design for maximum safety in normal operation and maximum tolerance for system malfunctions. Use design features inherently favorable to safe operation; emphasize quality, redundancy, inspectability and testability prior to acceptance for sustained commercial operation and over the plant lifetime. (98)

Shaw's emphasis on this level was vouched for by an unnamed administrator at Oak Ridge, who told reported Robert Gillette of Science magazine:

> You have to give Shaw credit for pushing the industry to adopt tougher (construction) quality standards. They were urgently needed, and some elements of the industry--and I refer to Westinghouse and General Electric--fought it all the way. (99)

Now, it so happens that this administrator also had a bone to pick with Shaw. The quote just mentioned then states:

> The question is whether these or similar standards are appropriate for research facilities. We think they are not. (100)

There was an honest difference of opinion here. Shaw's comment to Gillette on whether research facilities should be built with the same care that power plants are built was yes:

> We don't want the technology damned
> because of flaws in the [testing]
> equipment. (101)

It should also be noted that the AEC's "first defense level" is succeeded by a second, whose essence is that it must be assumed that accidents will happen despite great attention to the first level. Thus it is necessary to provide safety systems to protect the plant's operators and the public. These include several features, including the ECCS, which is intended to prevent the worst possible outcome that might result from loss of cooling water. But CNI's frequent evokings of nuclear catastrophe were based on not one, but two, very unlikely happenings: a complete break in a thick, stainless steel pipe causing deformation of the pipe so that no water could flow between the two broken ends, and failure of the ECCS. Certainly it could happen. Any number of things could. But obviously life would not go on if people were constantly paralyzed by thoughts of what could happen to them when they leave the house.

To Shaw, then, it was a matter of priorities. As it was to the scientists at Oak Ridge and Aerojet. There was an honest difference of opinion, developed in part by differences in the disciplines involved, in the job at hand, and even in personal predilections. One person is fascinated by theoretical possibilities, another by putting things together. To Shaw some of the interesting questions raised by the people in the labs were, well, interesting. That they were vital he was not prepared to say.

Another point that needs to be addressed in connection with the rift between the laboratories and Shaw's division is the indelicate matter of money. Robert Gillette (whose series of articles in *Science* focuses far more on CNI's concerns than on defending the AEC) mentions that Shaw's staff believed that part of the laboratories' concern about safety stemmed from interest in getting further AEC research contracts. That accusation, Gillette says, "the researchers angrily deny." (102)

And yet it takes no very experienced mind to get the messages that are so obviously implicit in both the Weinberg and Cottrell letters quoted earlier in this paper. Cottrell's message to the AEC is that it's a mistake to let the industry do important research, so let Oak Ridge do it. Weinberg's message is, I'm glad things are getting patched up between AEC and us, and, by the way, we're available. There's nothing wrong in either letter. But it should be obvious that the views at Oak Ridge and Aerojet may have been tinged with unconscious self-interest, angry denials or no.*

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*It may not be irrelevant to mention here that the author of this paper, a freelance writer and editor for the last four years, has sent out messages like Weinberg's and Cottrell's more than once.

CNI's public relations triumph also stemmed in part from the fact that the statements made by certain witnesses who differed from the AEC's view of things were made in a public hearing being covered by the news media. There is something about a courtroom proceeding that focuses the attention mightily for most people. The words spoken by persons on the witness stand have far more impact, frequently, than those dug out of long, official documents. The appearances of the witnesses who supported some of CNI's views made a splash, and led George Freeman, the attorney for Consolidated Utilities, to complain about the AEC's handling of information:

> All of us know, as a matter of common sense, that there are bound to be strong differences of opinion within any organization on highly complex and technical matters of great moment. All of us with any connection with the nuclear industry have long known that there were a variety of views on the ECCS Interim Criteria within the AEC regulatory staff, within Oak Ridge, and within Aerojet. And yet, when the AEC staff's prepared testimony was filed, we were given only the pros and not the cons. Accordingly, as the internal dissents within these organizations have been brought to light through cross-examination, they have attracted far more attention than they would have if they had been placed in an overall balanced context initially. (103)

Freeman was a bit off the mark, however. Consider, for example, Section 3.3.5 of the testimony he is referring to. It deals with the semiscale blowdown tests in Idaho that had begun the whole ECCS controversy. The section doesn't mince words. It points out that in regard to those tests

> The most notable observation was the expulsion of all cooling water from the dummy reactor vessel for all tests with the break in the cold-leg [the pipe that carries cooling water into the pressure vessel]. (104)

The testimony also candidly acknowledges that the Idaho tests were "more realistic" than some earlier tests conducted at another laboratory. But it goes on to point out why, in the staff's estimation, the Idaho tests were not indicative of what would happen in an actual power reactor. There were three reasons for its view, the third of which is particularly self-explanatory:

> The single loop [meaning pipe] arrangement [in the test] did not provide the alternate vent paths for steam relief which would be present in the typical multi-loop PWR. As a result of the single loop, it was necessary to inject the accumulator water at some point in the single flow path. In contrast, in the multi-loop PWR the water is injected at several points. There is much less steam flow in the injection paths to impede the flow of the cooling liquid, or reverse it as occurred in this experiment. This is considered to be a significant defect in the experimental arrangement, insofar as representation of a power reactor is concerned. (105)

Nonetheless, the Staff took the most conservative position and required the evaluation models to postulate the loss of all accumulator water during blowdown.

The Commission probably erred, however, in refusing to permit members of the ACRS to testify. The Commission's refusal was predicated in part on its own administrative convenience, in part on tradition, and in part on its reluctance to further slow down the pace of construction of nuclear plants. If, with CNI, one assumes that certain members of the ACRS would have raised insurmountable objections to the adequacy of emergency core cooling systems, the only conclusion can be that the AEC was engaged in a cover-up. Yet, given the available evidence (in the form of letters from the ACRS to the Commission and written answers to interrogatories) it is difficult to conclude that ACRS members who took the witness stand would have arrived at the same conclusions about ECCS effectiveness, and therefore the need for a moratorium on reactor licensing, that CNI did. Although neither of the ACRS letters (one dated January 7, 1972, and dealing with the Interim Acceptance Criteria, the other dated September 10, 1973, and dealing with the final criteria) are totally free of a kind of ambiguity, although their cautious phrasing tends to provoke reading between the lines, both give the criteria passing grades. (CNI, it might be noted here, contended in its concluding statement, safety phase, that ACRS statements, when "correctly" interpreted, support its own stand, "Such [ACRS] language is intended to mislead the public into believing that the ACRS is supporting AEC safety policy that the ACRS is indeed disavowing." Emphasis in original.) (106)

CNI also got mileage out of its argument that RM-50-1 was too narrow in scope, that it excluded such matters related to performance criteria as the causes of a loss-of-coolant accident, the probability of one ever occurring, the consequences of a failure of an ECCS to perform adequately in the event of a LOCA, the AEC's so-called "Defense-in-depth" concept, steam generator tube failures, the integrity of the pressure vessel, and others.

Yet the AEC had administrative law, common sense, and the obvious practical considerations on its side. It had said from the beginning that the hearing was intended to explore technical questions of nuclear power plant safety based on the assumption that a loss-of-coolant accident had already occurred. It had said from the beginning that its rule would be based on the record of the hearing. The Regulatory Staff pointed out that matters excluded from the scope of RM-50-1 (such as pressure vessel failures) were subject to consideration in individual licensing proceedings or could be the subject of petitions for further rulemaking. It was obvious that if the Commission had included all these matters within the scope of RM-50-1 it would probably still be going on now.

And it should be pointed out that three of the matters held to be beyond the scope of the safety phase of RM-50-1--causes, probability, and consequences--could have been discussed during oral cross-examination in the environmental phase of the hearing, in which CNI declined to participate.

Lessons of the ECCS Rulemaking

On the first day of RM-50-1 the Hearing Board heard from several persons who wished to make statements. One of them was Dr. Ralph E. Lapp, a nuclear physicist who has written extensively about nuclear power plant safety. Lapp raised some of the problems that confront intervenors in AEC licensing or rulemaking cases, and by extension problems that confront all public interest groups:

> In order to match wits with the nuclear utility, the intervenor needs time, money, and availability of competent technical authority. I would estimate that perhaps $500,000 is the sum needed to fund an adequate intervention. Very often the intervenor finds it almost impossible to obtain the services of qualified persons to serve as experts. Too, often, the intervenor has felt that he was in contest with not only the utility and the nuclear vendors but also with the AEC. (107)

Obviously it's not easy to raise half a million dollars. By beating the bushes and living hand-to-mouth, Ford says, he and a few others were able to raise close to $100,000 for CNI, which didn't come close to covering all the costs. These costs were mainly attorneys' fees, hotel and meal costs, and travel expenses. Cherry and Ford spent most of the first eight months of RM-50-1 in Bethesda during the day and in Washington hotels in the evenings. Ford, who has since become the UCS executive director, was paid no salary, but all his travel and living expenses were paid. Cherry estimates that the hearing cost him between $36,000 and $42,000, a combination of both money due him but never raised and money out of his pocket for such things as telephone calls and hotel rooms. CNI got much scientific expertise donated free by UCS members, and Kendall was paid nothing for his services as a technical interrogator. All in all, said Ford, the hearing was "a major example of how difficult it is for citizens to participate" as intervenors. (108)

The financial costs to the citizen intervenors during RM-50-1 have apparently been in part responsible for proposals that the federal government pay the costs of citizen intervention in hearings and rulemakings before federal regulatory agencies Obviously money is a significant factor in determining whether such interventions will be attempted and, to some extent, how effective they will be. The utility companies, the vendors, and the AEC obviously had no problems in paying for highly professional expertise.

Nonetheless, proposals for federal funding of public intervention suggest several problems, both philosophic and practical. Perhaps the most significant is whether the institutionalizing of funding for public intervention might not result in some of the same kind of institutional problems that CNI was complaining about at the AEC--disregard of important questions, defense of bureaucratic empires, and so forth. Another problem is the extent to which challenges to federal agency judgments should be taken seriously. While CNI had obvious standing as an intervenor due to its inclusion of several large environmental groups and the United Auto Workers (which has a membership of roughly a million and a half), it is obvious that CNI did not represent the entire public either. As L. Manning Muntzing has said, CNI represented "a point of view." In this case it was a somewhat valid point of view. That might not be the case in interventions involving other public intervenors with much more limited support. On the other hand, the amount of public support may not indicate the validity of an intervenor's case.

RM-50-1 may have been idiosyncratic in that CNI did not need "competent technical authority" as that ordinarily would be construed. The role that Ford (and Kendall, to a much lesser degree) played did not require them to be scientific experts who could question the scientific determinations of a united opposition. Even though Ford learned a vast amount about the subject matter and was able to conduct his interrogations reasonably well, his role as an investigator was more important. What he had learned about loss-of-coolant accidents and emergency core cooling systems and the design of reactors was undoubtedly helpful, but not so much as a means of challenging opposing technical viewpoints as in revealing differences between the AEC and its laboratories. As Ford, put it when questioned by Cowan of Westinghouse:

> ...in terms of general knowledge of the field of emergency core cooling... [we] would readily defer to the various people--thorough, competent, solid engineers--who have dedicated themselves to studying this field... Now, I think that our function has been in part to assist these people in communicating with the Atomic Energy Commission by developing and cultivating this forum in which they can... break through the various bureaucratic menacles that have prohibited them for so long from expressing what is a widely shared, deeply felt view in the nuclear community itself... (109)

Together, Ford and Cherry were able to conduct what was a partly scientific and partly legal questioning of the witnesses. But Cherry also had a purely legal role in the discovery of evidence and in the attempt to summon witnesses from the ACRS. In this way he raised procedure questions, some of whose answers were vital to CNI's efforts. Without an attorney familiar with the intricacies of the law and of courtroom tactics it is at least debatable whether CNI would have been nearly as successful in taking advantage of the adjudicatory fearures melded into the rulemaking proceeding. RM-50-1 suggests an indivisible relationship among technology, regulation, and the law. The resolution of controversies over the regulation of complex technologies is not purely scientific.

The ECCS rulemaking demonstrates other lessons that might be taken into consideration by both elected officials and agency administrators.

Perhaps the most obvious is that it is a basic contradiction in terms to assign an agency the dual role of both promotion and regulation. This contradiction was, of course, recognized when the Atomic Energy Commission was split into ERDA and NRC early in 1975. Yet past experience with such agencies as the Interstate Commerce Commission, for example, should have suggested to Congress the problems that would ensue when it established the AEC soon after World War II. The argument then was that both technological considerations and administrative convenience dictated a twin role for the AEC. Too little weight was given to arguments that even strictly regulatory agencies have difficulty in maintaining an unimpeachably independent stance.

Certainly Norman C. Rasmussen, professor of nuclear engineering at MIT, pointed out an unarguable reality when he said that

> It has been argued that since we do not have precise knowledge of all the phenomena that may occur during a LOCA we cannot be confident that ECC systems will be effective. I cannot agree with this argument since essentially all major engineering projects must be undertaken without precise knowledge of all the phenomena involved. (110)

But there is a question of degree involved. If the phenomena involve technological products with a high, or potentially high, adverse effect on the public, the judgment of what is adequate should not be made by technocrats alone. The AEC's willingness to invite public participation during the judgmental process and to take steps to make that participation meaningful was commendable, whatever CNI's reservations. RM-50-1 suggests that in the future other federal agencies should be required to admit public participation going beyond written comment on proposed regulations whenever the regulations promise to be controversial. While such participation has increased in recent years, it is less than invariable.

Finally, it should be pointed out that the ECCS rulemaking drew essentially favorable reviews from representatives of ordinarily divergent viewpoints who were interviewed for this paper. They seem to disagree with Ebbin and Kasper's view that while generic AEC rulemakings like RM-50-1 make "good sense from the point of view of administrative and procedural expediency," they may not have the effect of improving public participation. (111) "It is much more difficult," they contend, "to generate public interest in generic hearings (located, most probably, in Bethesda or Washington) than in a set of hearings on a particular, local issue" such as a licensing case. (112)

Cherry, however, believes that the wide publicity that surrounded RM-50-1 was a significant factor in broadening the opposition to nuclear power, particularly because it resulted in Ralph Nader's decision to join that opposition. Muntzing believes that CNI was "very helpful in pinpointing certain problems" that needed resolution. (113) And Freeman, the utilities' lawyer, says that CNI made "a valuable contribution to the earlier phase of the hearings" and "helped to break down the residuum of secrecy [at the AEC] that was a hangover from the old military days." (114)

FOOTNOTES
EXPERIMENT IN RULEMAKING: THE DEBATE OVER EMERGENCY CORE COOLING SYSTEMS

1. By James P. Murray. Transcript of oral argument before Atomic Energy Commission, Oct. 9, 1973, Docket No. RM-50-1, Rulemaking Hearing, Acceptance Criteria for Emergency Core Cooling Systems for Light-Water-Cooled Nuclear Power Reactors, p. 16.

2. Opinion of the Commission--In the Matter of Rulemaking Hearing, Acceptance Criteria for Emergency Core Cooling Systems for Light-Water-Cooled Nuclear Power Reactors, Docket No. RM-50-1, December 28, 1973, p.1.

3. AEC Press Release No. R-209, "AEC Makes Organizational Changes," May 15, 1973, p.1.

4. New York Times, December 28, 1973, p. 1.

5. Ibid.

6. Ibid.

7. Telephone conversation between Myron M. Cherry and Phillip Sawicki, July 18, 1976.

8. Opinion of the Commission p. 29.

9. Atomic Energy Commission, WASH-1250, The Safety of Nuclear Power Reactors (Light Water-Cooled) and Related Facilities (Washington: Atomic Energy Commission, 1973), p. 7-4.

10. John F. Hogerton, Atomic Power Safety (Washington: Atomic Energy Commission, 1964), p. 19

11. WASH-1250, p. 7-4.

12. Ibid., p. 8-11.

13. Ibid.

14. "Emergency Core Cooling," Stephen H. Hanauer, Statement at the Press Briefing, January 17, 1972, p. 3.

15. WASH-1250, p. 8-13.

16. Quoted in Robert Gillette, "Nuclear Reactor Safety: A Skeleton at the Feast?", Science, 172 (1971), p. 919.

17. Transcript, Docket No. RM-50-1, Rulemaking Hearing, Acceptance Criteria for Emergency Core Cooling Systems, p. 5929. (Hereinafter, ECCS Transcript.)

18. ECCS Exhibit 1112, Docket No. RM-50-1, p. 2.

19. Quoted in Gillette, "Nuclear Reactor Safety: A Skeleton at the Feast?", p. 919.

20. Atomic Energy Commission, Interim Policy Statement, Interim Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Power Reactors (Washington: U. S. Government Printing Office, 1971), pp. 2-3.

21. Ibid.

22. New York Times, August 20, 1971, p. 10.

23. New York Times, October 20, 1971, p. 1.

24. Quoted in Robert Gillette, "Nuclear Safety (IV): Barriers to Communication," Science 177 (1972) p. 1082.

25. AEC Press Release No. O-242, "AEC Schedules Public Rulemaking Hearings on Major Regulatory Issues," November 29, 1971, p. 1.

26. AEC Press Release No. P-5, "AEC Outlines Detailed Procedures for Two Rulemaking Hearings," January 7, 1972, p. 2.

27. Ibid., p. 2.

28. Ibid., p. 1.

29. Ibid., p. 2.

30. Ibid., p. 3.

31. Ibid.

32. ECCS Transcript, p. 64.

33. Ibid., p. 118

34. Ibid., p. 141.

35. Ibid., p. 142.

36. Commission Order of January 26, 1972, ruling on request for subpoenas directed to Advisory Committee on Reactor Safeguards, Docket No. RM-50-1, p. 1.

37. Ibid., p. 2.

38. Advisory Committee on Reactor Safeguards Letter of January 7, 1972, to AEC Chairman James R. Schlesinger, p. 1.

39. Ibid., p. 2.

40. ECCS Transcript, p. 420

41. Chicago today, February 6, 1972. (Reprinted in Congressional Record February 8, 1972, S 1394.)

42. Commission Order of February 4, 1972, ruling on Hearing Board Order of January 31, 1972, p. 2.

43. Ibid.

44. Commission Order of February 23, 1972, regarding the hearing schedule, p. 2.

45. ECCS Transcript, p. 734.

46. ECCS Transcript, p. 992.

47. Ibid., p. 984.

48. Ibid., p. [illegible]009.

49. Ibid., p. 7382

50. Quoted in Joel Primack and Frank von Hippel, Advice and Dissent--Scientists In the Political Arena (new York: Basic Books, Inc., 1974),pp. 224-25.

51. ECCS Exhibit 715, p. 2.

52. Ibid.

53. ECCS Exhibit 1043, p. 30.

54. Ibid., p. 33.

55. Ibid.

56. Ibid., p. 52.

57. ECCS Transcript, p. 8200.

58. Ibid., p. 4715.

59. Ibid., p. 4718.

60. Ibid., p. 5047.

61. Ibid., p. 6816.

62. Quoted by Primack and von Hippel, op. cit., pp. 220-21.

63. ECCS Exhibit 1020, p. 2

64. Ibid.

65. ECCS Transcript, p. 7289.

66. ECCS Exhibit 1027.

67. Robert Gillette, "Reactor Safety: AEC Concedes Some Points to Its Critics," Science 178 (1972), p. 482.

68. Supplemental Testimony of the AEC Regulatory Staff. Public Rulemaking Hearing on: Interim Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Cooled Power Reactors, Docket No. RM-50-1. Filed October 26, 1972. p. 1-3.

69. Ibid., p. 1-4.

70. Ibid.

71. Final Environmental Statement Concerning Proposed Rulemaking Action: Acceptance Criteria for Emergency Core Cooling Systems for Light-Water-Cooled Nuclear Power Reactors, Docket No. RM-50-1, Volume 2, p. 49.

72. CNI Statement of July 20, 1973, on Board Orders of June 13, July 10, and July 13, 1973.

73. Board Order, July 13, 1973.

74. Ibid

75. Opinion of the Commission, p. 26.

76. Selected Issuances of the Atomic Energy Commission and the Hearing Board in the Rulemaking Proceeding on Acceptance Criteria for Emergency Core Cooling Systems for Light-Water-Cooled Nuclear Power Reactors, Docket No. RM-50-1 (Oak Ridge, Tennessee: U. S. Energy Research and Development Administration, 1975), preface. TID-26713.

77. Telephone conversation between Daniel F. Ford and Phillip Sawicki, August 19, 1976.

78. Hearing Board Procedural Rule on Objections to Questioning of May 17, 1972, p. 3.

79. Ibid., p. 6.

80. Ibid., p. 5.

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82. Personal conversation between L. Manning Muntzing and Phillip Sawicki, July 22, 1976.

83. Steven Ebbin and Raphael Kasper, Citizen Groups and the Nuclear Power Controversy: Uses of Scientific and Technological Information (Cambridge, Mass.: The MIT Press, 1974(, pp. 174-75.

84. Ibid., p. 220.

85. Ibid.

86. Ibid

87. Ibid., p. 221.

88. Ibid.

89. Ibid., p. 224.

90. Ibid.

91. Ibid.

92. Ibid., p. 172.

93. ECCS Exhibit 1029, p. 1

94. Ibid.

95. Ibid., p. 2.

96. ECCS Exhibit 1043, pp. 19-20.

97. Quoted in Robert Gillette, "Nuclear Reactor Safety: At the AEC the Way of the Dissenter Is Hard," *Science* 176 (1972), p. 492.

98. WASH-1250, p. 2-2.

99. Robert Gillette, "Nuclear Safety (I): The Roots of Dissent," *Science* 177 (1972), p. 771.

100. Ibid.

101. Robert Gillette, "Nuclear Safety (II): The Years of Delay," *Science* 177 (1972) p. 870.

102. Gillette, "Nuclear Safety (I): The Roots of Dissent," p. 772.

103. George Freeman, "The Emerging Role of Rulemaking in the AEC Decisional Process," April 17, 1972. (Quoted in Ebbin and Kasper, op. cit., p. 263.)

104. Testimony of the AEC Regulatory Staff at a Public Rulemaking Hearing on Interim Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Power Reactors, January 27, 1972, p. 3-53. (Issued December 28, 1971.)

105. Ibid., p. 3-55.

106. Daniel F. Ford and Henry W. Kendall, *An Assessment of the Emergency Core Cooling Systems Rulemaking Hearings* (San Francisco: Friends of the Earth, 1974), p. 4.44. (This is a reprint of Concluding Statement--Safety Phase--Prepared by the Union of Concerned Scientists on behalf of the Consolidated National Intervenors in the Matter of Interim Acceptance Criteria for Emergency Core Cooling Systems for Light-Water-Cooled Nuclear Power Plants, AEC Docket No. RM-50-1.)

107. Statement of Dr. Ralph E. Lapp, January 27, 1972, Public Rulemaking Hearing, Interim Acceptance Criteria for Emergency Core Cooling Systems, Docket No. RM-50-1.

108. Ford/Sawicki conversation, August 19, 1976.

109. ECCS Transcript, p. 19,267.

110. Ibid., p. 441.

111. Ebbin and Kasper, op. cit., p. 153.

112. Ibid.

113. Muntzing/Sawicki personal conversation, July 22, 1976.

114. Telephone conversation between George Freeman and Phillip Sawicki, July 13, 1976.

Appendix A

CHRONOLOGY

1963
Work begins on Loss-of-Fluid Test (LOFT) reactor at National Reactor Testing Station in Idaho.

1964
December: Milton Shaw becomes head of AEC's Division of Reactor Development and Technology (RDT).

1966
AEC appoints Advisory Task Force on Power Reactor Emergency cooling, the so-called Ergen task force.

1968
January: final report of Ergen task force is published.

1970
February: AEC publishes Water Reactor Safety Program Plan (WASH-1146).
November: semiscale blowdown tests begin at NRTS.

1971
March: semiscale blowdown tests end.
June: Rosen/Colmar memorandum is sent to Regulatory Staff ECCS task force. AEC issues Interim Acceptance Criteria for emergency core cooling systems.
July: Glenn T. Seaborg resigns as chairman of Atomic Energy Commission. James R. Schlesinger is named to succeed him.
September: AEC announces intention to comply with federal Court of Appeals verdict regarding AEC implementation of National Environmental Policy Act (NEPA).
October: Schlesinger tells nuclear power industry meeting that AEC will no longer fight industry's battles.
November: AEC announces decision to hold public rulemaking hearings on radioactivity releases and on emergency core cooling systems.
December: AEC Regulatory Staff issues first technical explanation for Interim Acceptance Criteria.

1972
January: RM-50-1 rulemaking hearings on Interim Acceptance Criteria for emergency core cooling systems begins. Consolidated National Intervenors (CNI) call for suspension of all AEC licensing for construction or operation of nuclear power plants.

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1972 (cont'd)

April: AEC rejects proposal to shift safety research from Shaw's Division of Reactor Development and Technology to Regulatory Staff. Reactor Development and Technology to Regulatory Staff.

December: AEC issues Draft Environmental Statement for proposed rulemaking action on acceptance criteria for emergency core cooling systems.

1973

February: Dixy Lee Ray succeeds Schlesinger as chairman of AEC.

May: AEC issues Final Environmental Statement for proposed rulemaking action on acceptance criteria for emergency core cooling systems. AEC reorganization removes safety research from RDT to new division.

June: Shaw resignation as head of Division of Reactor Development and Technology is announced.

July: CNI declines to take part in oral questioning of Regulatory Staff on Final Environmental Statement. RM-50-1 public hearings conclude.

October: Commission hears oral argument from participants in RM-50-1.

December: AEC announces opinion and acceptance criteria for emergency core cooling systems.

Appendix B

MEMBERS OF
CONSOLIDATED NATIONAL INTERVENORS (CNI)

Union of Concerned Scientists (Cambridge, Mass.)
Sierra Club
National Resources Defense Council
National Wildlife Federation
United Auto Workers (UAW)
Businessmen for the Public Interest (Chicago)
Saginaw Valley Nuclear Study Group
Citizens Committee for the Environmental Protection of Michigan
Trout, Unlimited
West Michigan Environmental Action Council, Inc.
University of Michigan Environmental Law Society
Protect Our Wisconsin Environmental Resources
Environmental Action, Inc. (Hilton Head, S.C.)
Survivors, Inc. (Haledon, N.J.)
Citizens Committee for Radiation Control (New York City)
Horace E. Bailey
William F. Faust
Nelson Aeschliman
John L. and Hilda M. Wentworth
John and Loretta Liddell
Wendell H. Marshal
Lloyd Harbor Study Group, Inc.
Federation of Homemakers (Arlington, Va.)
Wisconsin's Environmental Decade, Inc.
Community Action to Reverse Pollution (Gary, Ind.)
Joint Schools Committee for Academic Excellence Now, Inc. (New York City)
Conservation Society for Southern Vermont
Vermont Natural Resources Council
Lake Champlain Committee
Citizens League for Education about Nuclear Energy, Inc. (New Rochelle, N. Y.)
Rockland Ecological Coalition, Inc. (Spring Valley, N.Y.)
Izaak Walton League of America (Chesterton, Ind.)
Scientists and Engineers for Social and Political Action (New York City)
Protect Your Environment (Albany, N.Y.)
Carolina Environmental Study Group, Inc. (Charlotte, N.C.)
Oregon Environmental Council (Portland, Ore.)
Eugene Future Power Committee, Inc. (Eugene, Ore.)
Citizens' Rights Committee (Hicksville, N.Y.)
Independent Phi Beta Kappa Environmental Study Group (New York City)
Pompeston Environmental Committee (Cinnaminson, N.J.)
Rockland County Conservation Association, Inc. (Spring Valley, N.Y.)

Ecology Action (Oswego, N.Y.)
Environment: Pittsburgh (Pittsburgh, Pa.)
Society for Social Responsibility in Science (Pottstown, Pa.)
Cortlandt Conservation Association, Inc. (Croton-on-Hudson, N.Y.)
Environmental Coalition on Nuclear Power (Norristown, Pa.)
Delaware Valley Committee for Protection of the Environment (Moorestown, N.J.)
Citizens Committee for Protection of the Environment (Ossining, N.Y.)
Anti-Pollution League (Allentown, N.J.)
New England Coalition against Nuclear Pollution, Inc. (Brattleboro, Vt.)
Citizens Committee to Save Cayuga Lake
Kalamazoo Nature Center (Kalamazoo, Mich.)

Appendix C

MEMBERS OF

CONSOLIDATED UTILITIES

Consolidated Edison Company of New York
Detroit Edison Company
Rochester Gas and Electric Corporation
Power Authority of the State of New York
Duke Power Company
Yankee Atomic Electric Company
Consumers Power Company
Long Island Lighting Company
Southern California Edison
San Diego Gas and Electric Company
Philadelphia Electric Company
Florida Power and Light Company
Pacific Gas and Electric Company
Middle South Utilities Group
Virginia Electric and Power Company
Portland General Electric Company

Appendix D

AEC PROCEDURES FOR THE ECCS RULEMAKING HEARING

1. All persons admitted as participants will present their testimony under oath and will be afforded the opportunity for relevant questioning of the witnesses of other participants as may be required for full and true disclosure of the facts.

2. The Commission's determination in the rulemaking proceeding will be supported by the record; if reliance is placed on information which is not in the record, notice will be given of such information and an opportunity provided to comment thereon and to request an opportunity to respond thereto.

3. Participants will make appropriate documents available to the extent practicable and will reference and produce on request the documents on which they rely. Requests for interrogatories, depositions, or formal discovery will not be entertained unless, in exceptional circumstances, the presiding board finds that there is compelling justification therefor.

4. The AEC will make available appropriate witnesses to explain the background, purpose, and rationale of its proposed numerical guides for design objectives and technical specification requirements for limiting conditions for operation of light water-cooled nuclear power reactors to keep radioactivity in effluents as low as practicable, published on June 9, 1971. Other participants, to the extent practicable, are expected to make available knowledgeable persons. No subpoenas requiring the testimony of witnesses will be issued by the presiding board. Participants may request specified witnesses and, if such request is made, the presiding board, upon determining that the request is relevant, non-duplicative, and meritorious, will encourage such witnesses to testify. The presiding board may, upon a showing of exceptional circumstances, such as a case in which a particular named person has direct personal knowledge of a material fact not known to the witnesses in the proceeding, certify directly to the Commission for determination of whether the testimony of a named person should be included in the record of the proceeding.

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5. All direct testimony, and, to the extent practicable, all redirect testimony and rebuttal testimony shall be submitted in writing and copies served on the Commission (Attention: Chief, Public Proceedings Branch), the presiding board and all participants at least five days prior to the session of the hearing at which such testimony is to be presented. Such written testimony will be incorporated in the transcript of the hearing after identification and upon sponsorship by an expert witness without reading, but each witness will be permitted to make a brief oral summary under oath of his written testimony.

6. Participants are required to identify in writing the subject matter and portions of written testimony on which questioning is sought to be conducted prior to the session of the hearing in which such questioning will be conducted.

7. At the request of a participant, the presiding board may permit a qualified individual who has scientific or technical training or experience to participate on behalf of that participant in the examination and questioning of expert witnesses. Attorneys sponsoring such interrogatories must assume full responsibility for the interrogator's performance.

8. Two members of the presiding board will constitute a quorum, if one of those members is the chairman. Upon agreement of the participants, the chairman alone may preside over sessions of the hearing. It is expected that the entire presiding board will be present at all sessions to the extent practicable.

9. Consistent with the full and true disclosure of the facts, duplicative, redundant or nonproductive testimony or questioning will not be permitted and the presiding board will impose suitable restrictions to that end.

10. The presiding board will set appropriate, reasonable time limits on the questioning of witnesses.

11. The presiding board is authorized to take appropriate action to control the course of the hearing, including the authority to administer oaths and affirmations; rule on offers of, and receive, evidence; regulate the course of the hearing and the conduct of the participants, provide for consolidation of presentations and questioning as appropriate, dispose of procedural requests or similar matters; examine witnesses; hold conferences before or during the hearing; and certify questions to the Commission for its determination, either in its discretion or on direction of the Commission.

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BIOGRAPHY OF AUTHOR

Phillip Sawicki was born in Philadelphia in 1934. After high school, a year working at a chemical plant, and three years at music school he went to Harvard, graduating in 1959 with a B.A. in classical languages. Between 1960 and 1966 he worked for the *Washington Post*, *Northern Virginia Sun* (where he became managing editor), and the Washington Bureau of United Press International. In the fall of 1966 he was press secretary for Clive L. DuVal, Democratic candidate for Congress in Virginia's 10th District. From 1967 to 1972 he worked for *Rural Electrification* magazine (published by the National Rural Electric Cooperative Association) in Washington, first as news editor, then as managing editor. During the last four years, as a freelance writer and editor, he has handled various projects for the Drug Abuse Council, the Police Foundation, and the Urban Institute, among others. His book reviews and articles have appeared in the *Washington Post* and the *Washington Star*. This fall (1976) he is working as campaign press secretary for Rep. Joseph L. Fisher (D-Va.)

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THE ENERGY PARK EXPERIENCE IN PENNSLYVANIA

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THE ENERGY PARK EXPERIENCE IN PENNSYLVANIA

PREPARED BY

DR. FRANK CLEMENTE AND DR. TERRY A. FERRAR

ABSTRACT

This paper presents a history and an analysis of the events surrounding the Energy Park controversy in Pennsylvania from June 1973 to the present. In the Pennsylvania case, Energy Parks were defined as clusters of 10,000 (MW(e) to 20,000 MW(e) of generating capacity in a relatively small geographic area. A group of four utilities in the Commonwealth presented the concept to the Governor's Energy Council in January 1975. Ten non-metropolitan areas in the state were identified as potential sites.

The Governor's Energy Council conducted a series of public information and input meetings at each site during 1975. Overt response to the concept was overwhelmingly negative. Since no objective surveys were conducted, however, this negative reaction cannot be taken as representative of public opinion at large.

On January 23, 1976, the Council voted to suspend study of the concept and refer the generic questions of energy facility siting to the legislature. At the present time, there is no on-going research specifically on the concept by either the Commonwealth or the utilities.

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THE ENERGY PARK EXPERIENCE IN PENNSYLVANIA

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DR. FRANK CLEMENTE* AND DR. TERRY A. FERRAR**

This paper presents a history and an analysis of the events surrounding the Energy Park controversy in Pennsylvania from June 1973 until the present. The major goals of the report are threefold. First, to provide an objective and accurate chronology of events and to identify major actors in the drama. Second, to describe the process of public participation in the debate. And, third, to evaluate the role of key groups in this particular energy-related controversy.

At the outset it should be stressed that the paper is based on the assumption that the Pennsylvania experience has profound implications for other states considering energy centers as well as for the federal government. Indeed, the Pennsylvania situation provides insights into the sociopolitical dimensions of all types of energy facility siting whether they be centers, "quads" or mini-plants.

Background

In June 1973 a group of four electric utilities--Philadelphia Electric, Pennsylvania Power and Light, Metropolitan Edison and Pennsylvania Electric--began to investigate the feasibility of

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aggregated power plant siting in Pennsylvania. These four utilities, which together service 70 percent of the Commonwealth, commissioned an internal study of concentrated siting. In March 1974 system planners within the organization completed the report "Energy Parks in Pennsylvania--Where-When-How?". This report was distributed to managers of the four utilities, but it was not released to the public until January 1975.

In this report energy parks were defined as clusters of 10,000 megawatts to 20,000 megawatts of generating capacity in a relatively small geographic area. The report recommended further study of the concept. Officials of the four utilities accepted the recommendation and in June 1974 they formally established the Energy Park Development Group (EPDG). The original project manager of EPDG was Edward F. Reis of Pennsylvania Power and Light. Reis was succeeded by John H. Saeger of Pennsylvania Power and Light. The assistant project manager was Richard Mulford of Philadelphia Electric. In addition, the EPDG consisted of two task forces. Mr. J. R. Thorpe of GPU Service Corporation headed the Site Identification task force, and Mr. R. W. Werts of GPU headed the Transmission task force.

The Site Identification task force was guided, according to the utilities, by the following series of "ground rules":

(1) Energy park locations should not preempt prime farmland (if possible) or lands planned for governmental use.

(2) Energy park locations should avoid:

   (a) Densely populated areas,

   (b) Flood plains,

   (c) Regulated air basins, and

   (d) Areas of extensive power plant development.

(3) Energy park locations should have:

   (a) Suitable topography,

   (b) Rail and road access,

   (c) Acceptable atmospheric conditions,

   (d) Compatible land use, and

   (e) A minimal ecological disturbance.

In order to facilitate the site identification process, EPDG hired Gilbert Associates of Reading. The Gilbert firm had previously done work for the utilitis and had already engaged in a siting effort for Pennsylvania. Mr. Mike Cambria managed the project at Gilbert and in November 1974 this group completed their report Energy Park Development, Site Identification Study.

While many aspects of the Gilbert report are important, the following items are essential for a thorough understanding of subsequent events:

(1) An energy park was defined as 10,000 to 20,000 megawatts of concentrated generating capacity. The fuel source would be 50 percent fossil and 50 percent nuclear.

Start-up dates would be 1985 for first coal unit and 1987 for first nuclear unit.

(2) Ten potential sites and fifty-two additional locations within the state were identified (see attached map). The ten sites were divided into three groups. Group 1 contained three sites with few major deficiencies (LeRaysville, Ararat, Montour). Group 2 contained five sites with some problems, but where construction was still feasible (Clermont, Cherry Flats, Sheakleyville, Pine Glen, Donegal). Group 3 contained two sites with a serious deficiency where construction would probably not be possible (Lake City, Tobyhana). All potential sites were in rural or semi-rural areas.

(3) The Gilbert report projected a new population of 25,980 for a 20,000 MW(e) park. Of these, Gilbert projected 6,950 school children who would need 277 new school rooms. In addition, the Gilbert report projected 9,070 new jobs in a community as the result of the park.

On January 17, 1975, Reis, Thorpe, Cambria and Werts presented the energy park concept, the Gilbert study, the original utility report and a transmission study to the Governor's Energy Council (GEC) in Harrisburg. The GEC consists of members of industry, academia, government, and is chaired by the Lieutenant Governor. The self-definition of the GEC is as follows:

> The Governor's Energy Council was established by Executive Order of Governor Shapp in February 1974. The purpose of the Council is to strengthen the capacity of the Commonwealth to respond to the complex problems related to energy. The Council is the principal authority within the Commonwealth for all aspects of energy policies and programs. It has the authority to exercise control and coordination necessary to insure the proper management of energy use, conservation, and production throughout the Commonwealth.

In practice, the GEC is an arm of the Governor's office and provides input on key energy-related issues.

The EPDG presentation to the GEC was important for at least two reasons:

(1) It was the first time the concept reached the public, and

(2) The key terms were now defined in the public eye, and thus more or less cast in stone.

Reis, the EPDG project manager, defined an energy park as a concentration of electric-generating capability in a relatively small geographic area. He emphasized that his goal was to bring the GEC up to date on EPDG efforts and that the concept was still in the study phase. Reis pointed out that there was not commitment to build an energy park but only to determine if it was a viable alternative to dispersed power plant siting.

Reis projected a 5.9 percent annual growth rate in electricity load during the 1984-2000 period. He pointed out that this projection was compatible with the GEC's own data. An energy park, Reis pointed out, would be one means of meeting this demand.

He described a variety of potential benefits from the concept:

(1) More effective land use.

(2) Minimization of siting and licensing efforts.

(3) Standardization of engineering and construction.

(4) Labor force stability.

(5) Efficient utilization of support services.

(6) Flexibility in matching capacity growth to load requirements.

(7) Potential savings to consumer.

Potential problems identified by Reis were:

(1) Getting public acceptance.

(2) Site selection and acquisition.

(3) Heat dissipation.

(4) Financing.

In general, Reis concluded, EPDG felt that the potential benefits far outweighed the possible problems. Further, none of the potential problems seemed insurmountable. He asked the GEC to work with EPDG in setting up public information meetings as a first step in developing a site selection process.

After the EPDG presentation, the GEC voted unanimously to participate in further Energy Park planning and research as the coordinating agency for the Commonwealth. The GEC gave three reasons why it should be involved in the study process:

(1) To coordinate the efforts and facilitate the exchange of information on the concept and the study and evaluation of the concept among the State agencies involved and between the public, the electric utilities and other non-State government groups and these State agencies.

(2) To enable the State, in addition to the utilities, to become involved in the study process itself.

(3) To provide the means for public involvement in the study the Governor's Energy Council is setting up a series of public meetings to help satisfy this responsibility.

The first public information meeting was held January 30 in the William Penn Auditorium in Harrisburg. Many environmental groups were represented, and it became obvious that the concept was going to generate considerable controversy. Plans were then made to schedule meetings in all ten potential sites. The staff of the GEC took the lead in scheduling meetings. The GEC Executive Director, William Harral, took a very active role in the process. In addition, another staff member, Herbert Jacobs was appointed "Energy Parks Coordinator" on a full-time basis. These individuals spoke at public meetings, answered letters and phone inquiries, and generally provided a sounding board for complaints and questions from the public, government officials and special interest groups.

The GEC also addressed the issue from the technical side. The Center for the Study of Environmental Policy at The Pennsylvania State University contracted with the GEC to undertake a multidisciplinary study of the Energy Park concept. This investigation was conducted by economists, engineers, sociologists and geographers under the direction of Dr. Terry A. Ferrar.

In August, the Center's two volume report was released under the title Energy Parks and the Commonwealth of Pennsylvania--Issues and Recommendations. This report identified several major technical issues which were unresolved or inadequately treated in the Gilbert study. It was recommended that site-specific investigations be undertaken to obtain necessary data.

By Christmas 1975 the state had held public meetings at all ten potential sites, the Penn State report was completed and the GEC had access to a wide range of information on the Energy Park question. On January 23, 1976, the GEC met in Harrisburg and agreed to:

(1) Suspend study of the Energy Park concept until larger issues could be resolved. These issues included the proposed "Clean Air Amendments" and the broad questions of utility taxes and concentrated siting of nuclear power plants.

(2) Present a resolution to the Legislature asking that research be undertaken on all facets of energy facility siting.

After the GEC decision, the EPDG announced suspension of its activities. In a news release Saeger said, "We've gone as far as we can at this time." He called on the legislature to take action to resolve the unanswered questions regarding Energy Parks. Finally, he praised the GEC saying "in perhaps no other state has a group like the Energy Council come forward to involve the public in deciding on energy facilities."

At the present time, the energy park question is in limbo. The GEC has extricated itself, the EPDG is in a holding pattern and the legislature is unlikely to move rapidly in an election year.

PUBLIC PARTICIPATION

One of the most fascinating aspects of the energy park experience in Pennsylvania was the high degree of public visibility of the concept. The proposal became the subject of debate throughout the state in general and in the ten potential host counties in particular. Many arguments, both pro and con, were articulated at a series of public meetings in each of the ten candidate counties. Basically, there were two kinds of meetings:

(1) Public Information Meetings where experts and professionals spoke on the potential effects of the proposed facility. These meetings were coordinated by local community leaders and planners and Penn State Extension personnel. Speakers were drawn from a wide range of fields including nuclear engineering, biology, geology, economics, sociology and environmental studies. Other speakers represented the GEC the local government, various state agencies, the power companies, Gilbert Associates, and the Center at Penn State.

Such meetings were held at all ten sites during the period May-November 1975. Some counties held as many as eight or ten open meetings.

(2) Public Input Meetings were held by the Governor's Energy Council subsequent to the series of informational meetings.

At least one input meeting was held in each county. Statements, suggestions and conclusions were solicited from all interested citizens. Planning boards, local officials, interest groups, union leaders and many other segments of the communities (including private citizens) presented statements. Each meeting was attended by at least one representative of the Governor's Energy Council.

Significant public reaction emerged in each of the ten counties. These responses occurred along several dimensions:

(1) Dozens of citizens attended the public meetings, asked questions and made statements for or against the proposal.

(2) Organizations formed to either combat or facilitate construction of the facility. Private meetings were held to discuss strategy. Letters were written to the Governor, local officials and the newspaper. Petitions were circulated. Bumper stickers appeared on local automobiles.

(3) The media covered the story very thoroughly and local newspapers often ran feature articles on the controversy. Editorials were written pro and con. Local radio stations interviewed experts, local leaders and "the man on the street." The Pennsylvania Television Network produced a special program on the "Energy Park Controversy."

(4) Local officials took stands on the issue. Planning agencies and boards wrote reports, held meetings and presented their conclusions at the public input forums,

As both the EPDG and the GEC readily admit, the overt public response was negative. One EPDG official estimated that about 97 percent of the public input was against the concept. Unfortunately, it is far beyond the scope of the present project to analyze and interpret this input. It is possible, however, to give a brief overview of the major types of criticisms which emerged at the public meetings:

(1) Anti-nuclear--the definition of the energy park included a 50 percent nuclear component. This nuclear aspect generated vocal opposition to the concept in public meetings at both the state and local level. The Environmental Coalition on Nuclear Power, for example, was one of the main groups opposing the concept.

(2) Environmental Impact was also a major point of contention. Fishing clubs, farmers and many environmental groups claimed the park would have adverse ecological effects.

(3) Community Impacts was another major area of concern--particularly at the local level. The Gilbert report

projected a new population of over 25,000 people. This figure resulted in much consternation among residents of these rural areas.

(4) Equity Issues--Some residents claimed that under the Pennsylvania tax system local communities do not receive a "fair" proportion of tax revenuew from power plants. In Pennsylvania, utility tax revenues are redistributed according to the "local tax effort" of a jurisdiction. As the Pennsylvania Environmental Council has correctly pointed out:

> "It is the metropolitan areas of the state, with their immense base of locally tax-subject property, which benefit from the Public Utilities Realty Tax."

In other words, while rural areas would have the "burden" of energy parks, the metropolitan areas would receive most of the tax revenue.

Another "equity" issue which consistently appeared related to why no metropolitan areas were included in the potential sites. Many speakers at meetings said that the EPDG thought "our lives are worth less" than city dwellers. They resented the implication that large cities had been avoided in site selection because the energy parks were dangerous. The fact that energy produced at the park would be transmitted to the cities did not lessen their irritation with the concept.

(5) Need was called into question by many citizens making input. Some environmental groups challenged the EPDG's 5.9 percent growth rate. They argued that conservation efforts should be emphasized and this would sharply curtail the 5.9 percent growth projections.

There were, of course, many other criticisms of the energy park concept, e.g., susceptibility to sabotage, unaesthetic, not suited for rural areas and the fact that alternative forms of energy were not considered. A much needed research study is the thorough analysis of the hundreds of letters, petitions, statements and articles that were written on the subject.

Just as there were negative comments on the Energy Park concept, so were there some positive responses. In general, the major positive reaction which surfaced at the public meetings related to projections that the economy of the local area would be stimulated by the construction of the park. Jobs would be created and business would prosper. Several labor unions were very supportive of the concept (e.g., IBEW locals). In addition, Chambers of Commerce officials and local development groups generally supported the idea. This positive perspective, however, was definitely in the minority.

In sum, then, public involvement in the process was largely confined to a long series of public meetings in each candidate county. Given the number of meetings, the time span and the publicity the meetings received, it is likely that all interested individuals and groups had the opportunity to learn about the concept and to make input to the GEC.

ANALYSIS OF KEY GROUPS

This section provides an interpretation of the role and behavior of three key groups in the Energy Park controversy. It is subjective to the extent that it is interpretative. The following remarks are intended as neither an apologia for or condemnation of any groups:

(1) The EPDG, representing the utilities, first brought the concept to the public attention by presenting it to the GEC. They came to the GEC, as they readily admitted, for help in pursuing a new concept in power plant siting. The EPDG confessed they did not have all the answers but felt, in Reis' words that "there is a definite need for state and public participation in the process".

Given the early stage at which the EPDG went public, it is surprising that in the subsequent public meetings the EPDG was often criticized for having already chosen the site and, in one case, of having already purchased land. There is no evidence that such charges had any foundation. In fact, all available evidence suggests that the EPDG acted in good faith in bringing the public into the process at an early stage.

At the present time, many utility officials believe that the public was brought into the act at too early a stage. The concept was still abstract and its very abstraction allowed for unreasonable or irrelevant criticism. For example, a professor of history at the University of Pittsburgh stated that within fifty years energy parks would occupy one-fifth of all land in Pennsylvania.

The question of going to the public too early aside, however, it is reasonable to conclude that the EPDG made at least two other mistakes:

(a) EPDG underestimated the difficulty in obtaining public acceptance. The EPDG growth estimates were challenged, anti-nuclear and environmental groups showed strong organization and a general distrust of big business was readily apparent. The EPDG clearly suffered from a credibility problem.

(b) EPDG did an inadequate job on the technical side. Subsequent research brought some key EPDG points into serious question. Discrepancies between the Gilbert report and the Penn State study were often delineated at the public meetings. Critics of the concept used these discrepancies to cast doubt upon the entire Gilbert report.

In sum, then, there is no objective evidence to indicate EPDG was attempting to "put one over" on the public. By the same token there is reason to conclude that EPDG suffered from poor public relations, questionable input from consultants and the general erosion of faith in large institutions and business.

(2) The GEC, by its own volition, acted as coordinator of the Energy Park public meetings. As Saeger pointed out, probably no other state has had a comparable public airing of such a major issue. The GEC can claim responsibility for the public meetings and for the fact that all sectors of the Commonwealth population had an opportunity to make input to the Council.

Further, the GEC staff, especially Harral and Jacobs, were intimately involved in the process. They attended public meetings and answered both reasonable and unreasonable questions with equal aplomb. In the public mind these two men had been identified with the concept and both suffered a certain amount of personal abuse from the more hostile critics at the public meetings.

Despite these efforts, however, an aura of incompleteness still surrounds the process. At the present time, the energy park issue is unresolved. None of the combatants is happy. The utilities say an exciting new concept is stuck in a quagmire. At the same time, some environmental groups charge that the energy park study is going on at a sub rosa level. In other words, the mutual distrust between opposing factions in the Commonwealth was exacerbated, rather than mitigated, by the public hearings.

The GEC formally saw public meetings as providing the opportunity to special interest groups and concerned citizens to make input regarding the concept. This, of course, is a legitimate use of the meeting process. De facto, however, the meetings were interpreted as indicators of general public opinion, because no other "hard" data were available. This is not to say that the GEC is politically naive, but merely that it quite possibly did not obtain an accurate picture of public opinion.

As an aside here, it is important to note that the authors know of no scientific survey conducted in the prime candidate counties. Thus, there is no objective index of general public reaction. The only adequate data which are available are from a survey of adult residents in Indiana County in the summer of 1975. Respondents were given the definition of an energy park and asked if they would oppose construction of such a facility. Less than 33 percent opposed the concept. Indiana County was not one of the prime sites, but was on the list of sixty-two sites identified in the Gilbert report.

(3) Environmental groups were integrally involved in the public meeting process. As a heterogenous state, Pennsylvania has a wide variety of environmental organizations ranging from Trout Unlimited to various antinuclear groups. All of these organizations were opposed to the concept and made critical statements at the public meetings.

A certain degree of coordination and cooperation between groups occurred across the state. In fact, the Energy Park controversy has served to spur interaction between groups previously ignorant of one another's existence. In this way, the situation has stimulated the environmental movement in Pennsylvania. Further, as was previously pointed out, many environmentalists do not believe the energy park study has been

> terminated, but rather is being carried on under the table.

The environmental groups, both established and ad hoc, provided vocal and solid opposition to the Energy Park concept. These special interest groups can be credited, for better or worse, with stalling further investigation of the concept.

One complaint which has been lodged against some environmental groups should be mentioned here. Specifically, representatives of certain groups traveled from site to site and made basically the same criticisms at all ten sites. To a real extent, then, these groups presented an intrusion into the public hearing process at the local level. In the words of one EPDG official, some environmentalists played the role of "truth squad" and continually brought up their own criticisms of the concept at every site.

CONCLUSIONS AND IMPLICATIONS

Based upon the foregoing discussion, it is possible to draw several conclusions and to derive implications for other states considering similar policy questions:

(1) The EPDG did a poor job in both presenting the concept to the public as well as in studying the technical issues involved. EPDG officials now believe that the concept would have had an entirely different reception had it been initially presented in an area of high unemployment. This hypothesis is supported by many studies of public attitudes toward industrial development. Adequate public relations could have made an energy park appear as a boon rather than a burden to the local community.

As was mentioned earlier, socioeconomic impact was one of the major concerns at the local level. Neither EPDG or Gilbert Associates were prepared to answer questions in this area.

(2) The GEC did a good job in setting up public meetings but did not supplement the results with more objective indicators of public opinion. The negativity of the public at the meetings predominated and gave the impression that "almost everyone was against it." When, in reality, all

the GEC knew was that almost everyone *who attended the meetings* was against it.

This conclusion has clear implications for obtaining measures of public opinion. It must be emphasized that the members of th[illegible] all recognized the inherent bias of public meeting[illegible] that the results could not be taken as indicative of the community at large. The point is that when push came to shove, the GEC had no objective survey of public opinion to compare to the results of the input meetings.

(3) Both the EPDG and the GEC suffered from severe credibility problems. Some residents in all ten counties were convinced that their county had already been selected as a site and that the public meetings were mere charades being conducted by the state and utilities. Much has already been written about the erosion of trust in government and big business. The Pennsylvania situation, however, is an operational example of the ramifications of this distrust.

(4) Energy facility siting proposals are vulnerable to attack on a wide variety of fronts. As was mentioned earlier, nuclear, environmental, socioeconomic and taxation

criticisms were only a few of the negative responses to the energy park question. Given the breadth and complexity of these problems, it is possible that a proposed energy park could be delayed indefinitely by intervenor suits. The public meetings in Pennsylvania served to highlight the fact that there are a myriad of special interest groups who could provide an insurmountable obstacle to the concept.

(5) Far from creating a climate of compromise, the public airing of the energy park concept actually increased hostility to the utilities and the state. In the ten counties, all new development is now challenged as the "first step toward an energy park." In central Pennsylvania, for example, a proposed dam by the U.S. Army Engineers has been accused of being planned to provide water for an energy park in Centre County (Pine Glen site).

General Conclusion

Previous sections have characterized an investigation conducted by concerned government and utility officials on the energy park concept. The intent of these activities was to delineate the effects of alternative decisions. This work, together with federally sponsored research, resulted in the unanimous conclusion that no overriding impediment was identified that suggested this concept was either infeasible or impractical. Without exception, these independent research teams concluded that further site-specific study was desirable.

Reflecting upon these Pennsylvania experiences, it is essential to appreciate that the overt public response to this concept investigation effort has thwarted the recommended site-specific studies. In light of this result, officials must ask, "How can informed public input be obtained without producing the side effects of unsubstantiated pressures for premature unilateral decision making?"

The Pennsylvania hearings were conducted to assist state and utility officials in perceiving the array of citizen concerns relevant to the siting of energy parks. As such, the gatherings were informally structured in order to encourage comprehensive discussion of this issue. The open meeting design, however, permitted much broader considerations to enter the debate, and realizable options to energy parks were ignored in favor of panacea answers. The activities of "anti-groups" (e.g., anti-nuclear, anti-growth) tended to encourage the public to consider these unachievable, but consoling options. This suggests that in designing public participation forums officials must recognize the trade-off between the comprehensiveness of dialogue, as achieved by informal meetings, and the consideration of relevant alternatives. In this interest, it may be necessary to confine discussion to prespecified options, as was recently done in Minnesota hearings on siting.*

A mechanism to permit continuous public involvement in energy planning may be the most effective manner of eliciting informed input. Perhaps a public advisor office, such as being considered in California, to assure continuing dialogue on emerging energy issues would be a successful technique. The continuity of such an office would remove much of the confusion and suspicion derived from intensive issue-oriented educational campaigns. Moreover, this office would serve to strengthen the creditability of utility and government officials by demonstratively encouraging public involvement in both long- and short-term energy planning.

In a time of severe resource constraint, it is regrettable when investigation of important alternatives to assist in the mitigation of inherent situational conflicts is retarded by cries for unilateral actions. In Pennsylvania, while researchers were expressing cautious optimism about the potential social gains available with this siting alternative, citizen reactions precipitated in the hearings have slowed further investigations. While political leaders and scientists agree with Dr. Albert Einstein's assertion, "Our representatives depend ultimately on decisions made in the village square . . . . From there must come America's voice.", this Pennsylvania experience suggests renewed consideration of the methods by which this village voice is obtained.

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*A recent Minnesota siting study is relevant to this point. In this case, public input was solicited in the specification and application of siting criteria.

APPENDIX A

TIMETABLE OF ENERGY PARK EXPERIENCE IN PENNSYLVANIA

Date	Event
June 1973	Four utilities initiate study of the concept.
March 1974	First report on concept submitted to utility managers by system planners and decision made to form Energy Park Development Group (EPDG).
November 1974	Gilbert Associates complete Site Identification Study for EPDG Task Force.
January 17, 1975	EPDG presentation of concept to Governor's Energy Council (GEC).
January 30, 1975	First public information hearing (Harrisburg).
May 1975 to December 1975	Public information and input meetings held in ten candidate counties.
January 23, 1976	GEC votes to suspend study of concept and refer general problem of siting to the legislature.
January 23, 1976	EPDG suspends operation.

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Candidate Energy Park sites

(Distances are approximate and in terms of air miles.)

1. Lake City – Two miles west of Lake City and 16 miles west/southwest of Erie.

2. Sheakleyville – 30 miles north/northeast of New Castle and seven miles east/northeast of Greenville.

3. Donegal – 40 miles southeast of Pittsburgh and three miles west/southwest of the Donegal Interchange of the Pennsylvania Turnpike.

4. Pine Glen – 20 miles north/northwest of State College and 40 miles north/northeast of Altoona.

5. Clermont – 70 miles north/northwest of State College and 85 miles east/southeast of Erie.

6. Cherry Flats – 30 miles south/southwest of Elmira, N.Y., 30 miles north/northwest of Williamsport and three miles west of Blossburg.

7. Le Raysville – 40 miles northwest of Scranton, 20 miles southwest of Binghamton, N.Y., and 30 miles southeast of Elmira, N.Y.

8. Montour – 20 miles north/northeast of the juncture of the west and north branches of the Susquehanna River.

9. Tobyhanna – 13 miles north/northwest of Stroudsburg and 23 miles southeast of Scranton.

10. Ararat – 23 miles northeast of Scranton and 25 miles southeast of Binghamton, N.Y.

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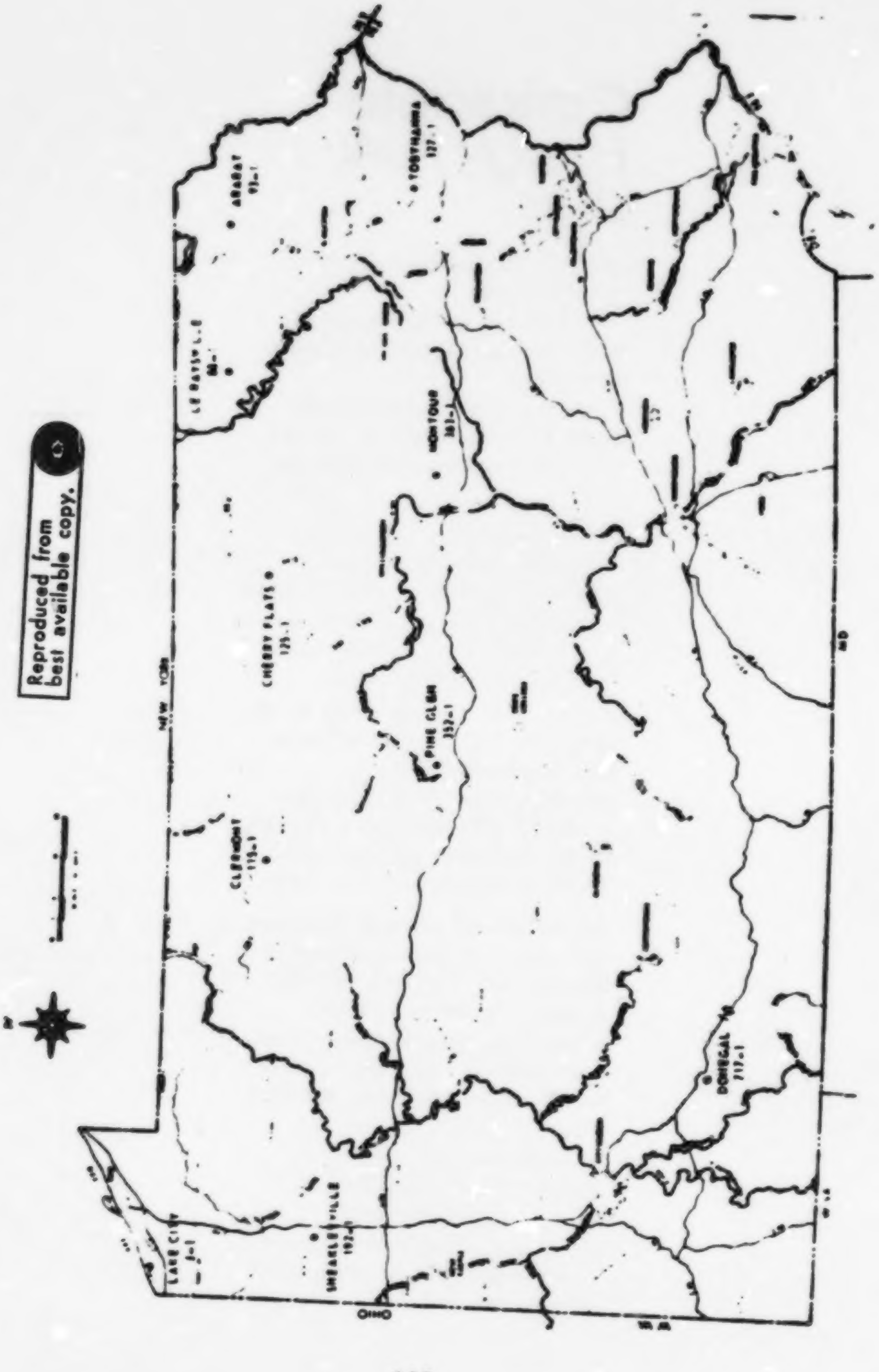
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FACT SHEET

ENERGY PARK DEVELOPMENT

The Energy Park Concept

Definition: Concentration of electric generating capacity in a relatively small geographic area.

Range of capacity: 10,000 to 20,000 megawatts by the year 2000.

Fuel source: 50 percent fossil fuel (coal and possibly oil), 50 percent nuclear.

Estimated start-up date: 1985 for fossil fuel plants, 1987 for nuclear.

Plant capacity: 800 - 1200 megawatts per unit for initial installations. 2000 - 2500 megawatts per unit for later construction.

Pennsylvania Electric Power Outlook

Projected annual growth rate: 3.5 to 7.5 percent through the year 2000.

Operating projection: 5.9 percent annually.

Total capacity required: 86,650 megawatts by year 2000 at 5.9 percent rate.

Present planning: Current and/or planned capacity through 1983 would provide 34,835 megawatts or only about 40 percent of projected capacity.

Energy Park capacity: Energy parks could provide up to 50 percent of the remaining new capacity needed between 1984 and the year 2000.

Public Benefits

.Effective, coordinated land use.

.Minimize costly individual site licensing and permit requirements.

.Avoid duplication of effort.

.Labor force stability.

.Efficient utilization of support services.

.Match capacity to load requirements.

.Enhanced ability to raise investment capital through shared risk.

.Estimated 30 percent increase in productivity through permanent work forces, more consistent planning and on-site engineering.

Challenges Posed

.Need for public support.

.Proper site selection and acquisition.

.Environmental safeguards.

.Initial financial requirements.

Siting

Locations: 10 sites and 52 additional locations initially acceptable.

Considerations: Topography, air basins, rail and road access, waste disposal and community planning.

Population density: Those with more than 400 persons per square mile or within 5 miles of a population center of 25,000 people or more screened out.

Selection: Technical evaluations with public participation coordinated by the Governor's Energy Council.

Transmission

Based on line lengths between 300 and 350 miles.

Voltage levels	Construction cost	Right of Way Required	Tower Configuration	Power Losses in Transmission
500 kV	$ 1.02 Billion	24,400 acres	ht. 140 feet wd. 116 feet	498 MW
765 kV	1.17 "	41,300 "	ht. 130 feet wd. 140 feet	369 "
1300 kV	1.21 "	42,700 "	ht. 190 feet wd. 190 feet	138 "
± 600 kV DC	1.12 "	15,800 "	ht. 140 feet wd. 80 feet	354 "

Environmental Concerns

Air quality: Sulfur dioxide control through regenerative or closed loop system.

Water quality: Available lakes, rivers and streams with specially constructed on-site ponds to hold water and treat effluents.

Heat dissipation: Use of available technology for cooling systems including water sink and wet-dry cooling towers.

Weather effects: Meterological effects resulting from heat dissipation must be studied carefully and minimized by site selection and facility arrangement.

COMMONWEALTH OF PENNSYLVANIA
GOVERNOR'S OFFICE
ENERGY COUNCIL
P. O. Box 1323
Harrisburg, Pa. 17120
(717) 787-9749

IMMEDIATE USE
January 23, 1976

Contact: William B. Harral
717-787-9749

The Governor's Energy Council Chaired by Lt. Governor Ernest P. Kline, voted unanimously today to suspend the study of the energy park concept until larger issues which are central to the study of the concept can be resolved.

These issues, which the Council feels must be confronted are:

The impact of proposed amendments to the Federal Clean Air Act which could severely limit the further development of coal fired generating plants;

Land-use planning as it affects the issue of siting energy facilities;

Federal proposals and facility siting, particularly the nuclear energy site survey being conducted by the Nuclear Regulatory Commission;

The issue of local incentives primarily in utility taxation field, and

The broad issues of concentrated siting of nuclear power plants.

The Council also voted to present a resolution to the Legislature of the Commonwealth asking that the Joint State Government Commission, the research and planning arm of the Legislature, be directed to undertake a large-scale and concentrated study on the issue of energy facility siting with recommendations on state legislation needed to implement state government's role in siting procedures.

It is contemplated that the Joint State Government Commission would form a task force of advisors on the subject including representation from the Executive Branch, Federal and Local Government, energy producers, suppliers and consumers.

A copy of the Governor's Energy Council statement on the energy park concept is attached.

REFERENCES

Energy Parks and the Commonwealth of Pennsylvania (two volumes), Center for the Study of Environmental Policy, The Pennsylvania State University, August 1975.

"Energy Parks in Pennsylvania," Energy Park Development Group, January 1975.

Site Identification Study, Gilbert Associates, November 1, 1974.

"The Public Utilities Realty Tax," Pennsylvania Environmental Council, July 1976.

BIOGRAPHIC SKETCHES

Dr. Frank Clemente is Senior Research Associate of the Environmental Policy Center at The Pennsylvania State University, and Director of Graduate Studies in Sociology. He has also served on the faculties of the University of Kentucky and the University of Wisconsin. Dr. Clemente is currently engaged in research on the social, economic and institutional effects of energy development. He has published over forty articles in refereed journals and is co-author of *Industrial Development in Non-Metropolitan Areas*. Another book, *Rural America: Problems and Prospects* is currently being edited and will appear in December 1977.

Dr. Terry A. Ferrar is Director of the Environmental Policy Center at The Pennsylvania State University and Associate Professor of Economics. Dr. Ferrar has extensively published in a variety of applied economics and research policy areas. Earning his Ph.D. from Purdue University, Dr. Ferrar has taught economics at the University of California and has been associated in an advisory capacity with many state and federal agencies on problems of energy and environmental policy analysis. In addition to the honor associated with being nominated to many prestigious committees, Dr. Ferrar is currently chairman of the Economic Effects Committee of the Air Pollution Control Association, and Executive Director of the American Association of Environmental Economists. His most recent book is *The Urban Costs of Climate Modification*.

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A CASE STUDY OF SEABROOK NUCLEAR STATION

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A CASE STUDY OF SEABROOK NUCLEAR STATION

PREPARED BY

JAMES C. SPENCER

ABSTRACT

This case study pertains to the licensing of two large nuclear powered reactors to be constructed on a coastal site in Seabrook, New Hampshire. The licensing procedures described and discussed are the New Hampshire Site Evaluation Committee's certification, the Nuclear Regulatory Commission's construction licensing, the Environmental Protection Agency's thermal discharge permitting and the U. S. Army Corps of Engineers' dredging and construction in navigable waters permitting. Emphasis is placed on the participation of members of the public in these proceedings. Also discussed are actions by concerned citizens, both for and against the construction of the plant, outside of the formal licensing procedings.

The above mentioned licensing processes contain two basic mechanisms for public involvement: legislative-type open forum public hearings and adjudicatory hearings. The first simply allows interested citizens to publicly voice their opinions, either orally or in writing, before a panel of agency representatives. The second is more rigorous and intensive in that it resembles a courtroom trial with presentation of evidence and cross-examination of witnesses. The advantages and disadvantages of both are discussed.

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Criticisms of the process from an overall perspective and of a more specific nature as raised by participants are included. Two issues of a general nature -- the credibility of agency decision-makers and the nuclear/anti-nuclear debate -- are discussed because of their potentially overriding significance in any efforts to improve the process. Specific criticisms raised include: the inequitable distribution of financial and technical resources between the utility and the opponents of the plant, the late entry of the public in the process rendering them ineffectual against the momentum gained by the utility in cooperation with the agency staff and the utility's complaint of overlap and redundancy in the various processes causing much undue delay in the project becoming a reality.

Many questions are raised, and a few suggestions are made. There are no definite answers presented; that obviously is the next step.

A CASE STUDY OF SEABROOK NUCLEAR STATION

PREPARED BY

JAMES C. SPENCER*

The trees are being cleared from the site in Seabrook where the Public Service Company of New Hampshire's many years of planning to build a nuclear power plant are becoming a reality. The bulldozers were preceded by years of debate between the opponents of the plant, and even as the construction begins, the opposition has not given up hope. There are still legal channels to pursue, and they will be pursued to the fullest. Even before the Nuclear Regulatory Commission could issue the construction license the opposition was engaged in the legal procedures to get the construction halted, and to get that decision overturned. In addition, the recent arrest of eighteen people during a non-violent, civil disobedient occupation of the site in protest of the plant, shows that people are willing to take actions outside of the legal channels to drive their point home; they do not want the nuclear power plant in Seabrook. Public Service Company is confident that it will be built.

The story of Seabrook is obviously not at an end. Before it is, many more battles, in the hearing halls, in the courtrooms, through the media and at the site, will probably be waged as they have in the past. What breeds these battles? The issues: nuclear power and the question of its safety, thermal disruption of marine ecosystems, and more basically, the need for electricity; all are controversial to be sure. But the purpose of this case study is not to redebate these issues, rather it is to review the forums in which they have been bandied about: the State of New Hampshire's Site Evaluation Committee's public hearings, the Nuclear Regulatory Commission's construction licensing process featuring the Atomic Safety and Licensing Board hearings, and the public hearings in the Environmental Protection Agency and U.S. Army Corps of Engineers' permitting procedures. As will be seen, they are forums based almost exclusively on an adversarial process and wrought by accusations of political interjection. There is little question that controversial issues brought into an adversarial and politically-charged atmosphere will lead to vehement and hotly contested battles. The licensing of the nuclear power plant at Seabrook, New Hampshire is definitely not an exception.

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* Massachusetts Institute of Technology, Dept. of Civil Engineering

Much of the information for this case study has been gathered through conversations with the participants. The author is grateful for those who spent time discussing their experiences. Without this the insight gained into the problems of public participation would not have been possible.

THE PROJECT

The action in question is the construction of two 1194 MWe* nuclear power reactors on a 715 acre tract of land in the northern part of Seabrook, New Hampshire. Seabrook is a small coastal community of slightly over 5,000 permanent residents, but one which has grown substantially over the past decade. Because of its recreational opportunities, the town supports a large number of summer residents and seasonal and single-day visitors. Within five miles of the chosen site are located North Beach, Hampton Beach, Seabrook Beach, Salisbury (Massachusetts) Beach and Hampton Beach State Park. A sunny summer afternoon could find close to 100,000 people within this five mile radius. The site is eleven miles southwest of Portsmouth, New Hampshire and forty miles north northeast of Boston. A map of the site is shown in Figure 1.

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* megawatts of electricity; one megawatt equals 1 million watts

> The Seabrook site is bordered on three sides (north, south, and east) by marshland . . . Within Seabrook itself less than 20% of the land is residential, 1.5% industrial and about 6% farming. The remainder is characterized as scrub and second land growth. The major high-density residential areas along the beach are to a large extent, occupied by seasonal residences. There are 43 schools, 3 hospitals, 9 parks and 1 airport within a ten-mile radius of the site. [1]

The design details of the plant are subject to regulation, review and approval by the Nuclear Regulatory Commission. As with all nuclear reactors a large portion of the heat generated to produce the steam that turns the turbines must be disposed of as waste. For economic reasons, "once through cooling" systems, in which ocean water is brought into the plant, circulated to collect the waste heat, and then returned to the ocean at a greatly elevated temperature, have been given primary consideration at the Seabrook plant. The details of

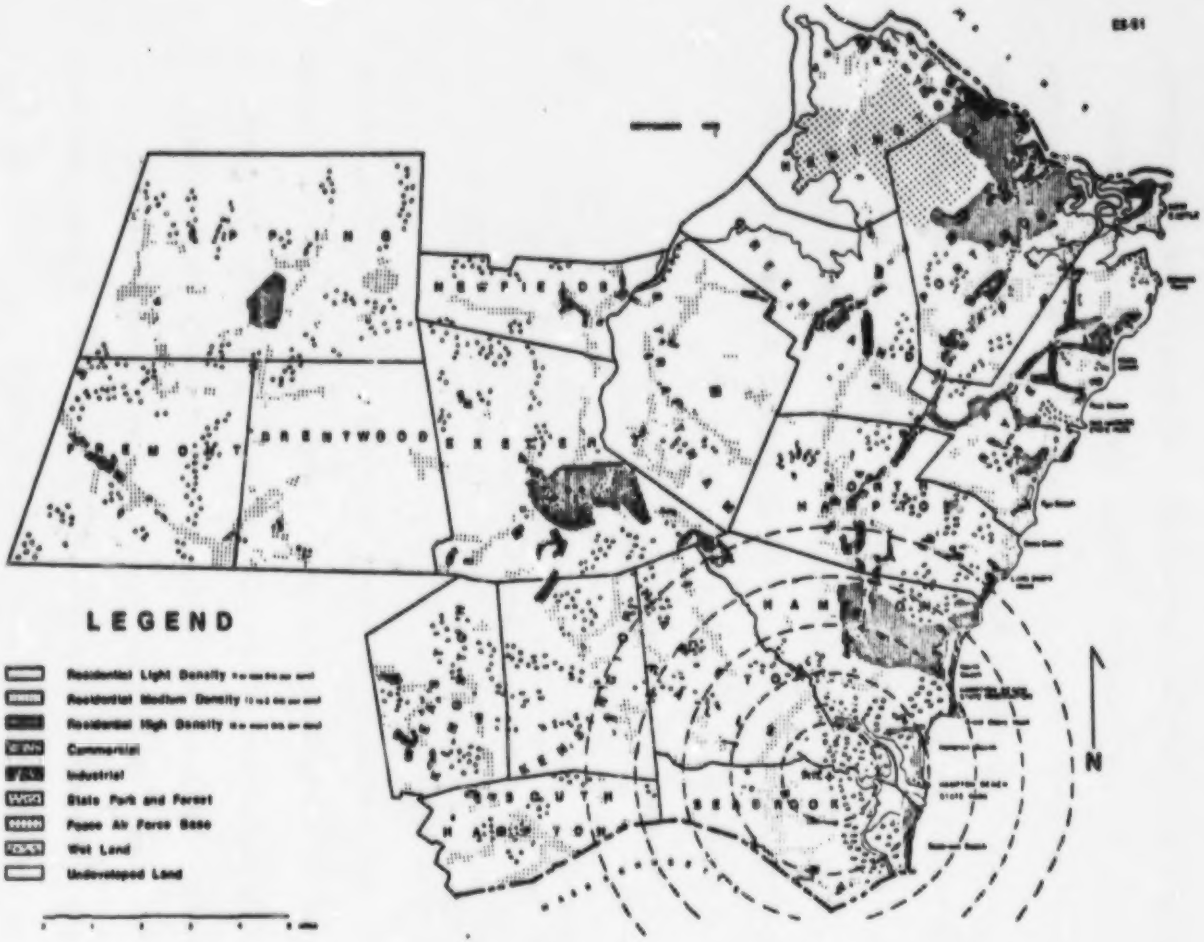
LEGEND
Residential Light Density
Residential Medium Density
Residential High Density
Commercial
Industrial
State Park and Forest
Pease Air Force Base
Wet Land
Undeveloped Land
N
EPPING
FREMONT
BRENTWOOD
NEWFIELDS
EXETER
HAMPTON
SEABROOK
SOUTH HAMPTON

FIGURE 1
MAP OF SEABROOK AND THE SURROUNDING AREA [2]

this system have been one of the major issues in the Seabrook controversy. The original concept was for an open channel intake structure bringing water directly from Hampton Harbor into the plant. Discharge was to be through a pipe running through the marsh and harbor out to the ocean. However, this has been replaced by a tunnel system to be drilled through the bedrock some 200 feet below the plant. Two tunnels, one to bring water in and one to return it to the ocean, both nineteen feet in diameter, would extend straight down from the plant to the underlying bedrock and then through the bedrock out to the ocean. The discharge tunnel will extend the two miles to shore and then another mile seaward into Maine Bay. The exact location of the intake structure has not yet been determined; however, it will extend a significant distance out into the Bay. The system will pump 824,000 gallons per minute and return it to the ocean 38° warmer than it came in. The latter system was designed, at significantly greater cost, to prevent encroachment on the environmentally sensitive and valuable salt marsh and to minimize the destruction of marine life resulting from a near shore inlet.

The project is being jointly funded by a number of New England utilities. However, fifty per cent of the ownership is vested in the Public Service Company of New Hampshire and hence they have represented the primary utility interest throughout the case.

PUBLIC PARTICIPATION IN THE CASE OF SEABROOK STATION

The involvement of concerned individuals and groups, both for and against the construction and operation of Seabrook Station, has taken many forms. Prior to the commencement of construction of the plant, Public Service was required to obtain numerous permits and licenses from various local, state and federal regulatory agencies. Within these lengthy, complex procedures are mired the formalized channels for public participation; these are summarized in Table 1. In addition, numerous activities outside of these formal proceedings merit discussion.

To fully understand many of the objections raised against the regulated forms of participation, it is essential to view them within the context of the overall sequence of licensing activities. Although the time periods are often overlapping, it is best to look at the activities of each agency separately. As a guide through the maze of events surrounding the Seabrook case, a Chronology of Events, also divided by licensing agency, is provided in Appendix A.

NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION/SITE EVALUATION COMMITTEE

The planning for Seabrook Station goes as far back as the mid to late 1960's. In 1967 a study by consultants hired by the Public Service Company of New Hampshire (Public Service)* concluded that the

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* A complete list of short names and abbreviations used throughout this paper are provided in Appendix B.

Regulatory Agency	Regulatory Process	Format for Participation
Federal		
Nuclear Regulatory Commission	Construction License	
	• Preparation of Environmental Impact Statement	Written comments
	• Advisory Committee on Reactor Safety (ACRS)	Written/oral testimony before committee
	• Prehearing Conference	Informal meeting of all parties to ASLB hearings
	• Atomic Safety and Licensing Appeals Board (ASLAB)	Written/oral testimony
Environmental Protection Agency	National pollutant discharge elimination system permits	Oral testimony at public hearings, adjudicatory hearing or appeal
U. S. Army Corps of Engineers	Dredge, spoil disposal and construction in navigable water permits	Oral/written testimony at public hearings
State of New Hampshire		
Public Utilities Commission (PUC)	Permit from Site Evaluation Committee (SEC)	Oral/written testimony at joint adjudicatory hearing of PUC and SEC
Local		
Town of Seabrook	Non-binding referendum	Secret ballot

TABLE 1
PUBLIC PARTICIPATORY MECHANISMS IN THE SITING OF THE SEABROOK NUCLEAR STATION

next generating station the company built should be a nuclear station located at Newington, New Hampshire. However, the site was in close proximity to the Pease Air Force Base and because of the danger of a B-52 crashing into the station, it was decided to look elsewhere. From among numerous other sites Seabrook was chosen, its major advantages being: (1) the ready availability of ocean water for cooling purposes, (2) the barge delivery of heavy equipment made possible by the coastal site, (3) the proximity to the region's area of heaviest electrical usage minimizing transmission line distances, and (4) the presence of a stable, solid rock foundation on which to build the station. Plans wavered and at one time the Seabrook plan was abandoned, but was picked up again shortly thereafter.

In June of 1971 the State of New Hampshire passed a law which created a process for the planning, siting and construction of bulk power supply facilities (e.g. electric generating stations and transmission lines). The law was passed with a view towards long range planning and an integrated incorporation of environmental, economic and technical considerations. In addition, a provision was included to assure an adequate public voice in the decision.

At least two years prior to the planned date of commencement of construction of such bulk power facilities, applications must be made for a certificate from the Site Evaluation Committee (SEC). On February 1, 1972 Public Service applied for such a certificate, opening the gates for the public to enter into the proceedings. The SEC was composed of twelve state officials, generally heads of all relevant agencies. William A. Healey, Director of the Water Supply and Pollution Control Commission, served as chairman.

Seabrook Station was the test case for this new law. The public voice was heard, as required, at a joint SEC/Public Utilities Commission hearing. The law requires that the Attorney General "appoint an assistant attorney general as a counsel for the public. The counsel shall represent the public and its interests in protecting the quality of the environment and in the assurance of an adequate electric power supply . . ." [3] The job fell to Mr. Donald Stever. He interpreted his role as one in which he should "try the case like a private litigant . . . an independent prosecutor with no client." He felt ignorant of the subject matter, so he took all the available information to the University of New Hampshire, a technical resource he could tap without pay under the State Environmental Act. He also got some technical assistance from the State Fish and Game Department. Most of the responses he got from these people were that there was not enough information to make determinations.

Other environmental groups and concerned individuals sought representation of their own. The Society for the Protection of New Hampshire Forests (Forest Society) had long been one of the most active conservation groups in the State and had been very influential in getting the law passed in the first place. They acquired the services of Mr. Robert Backus, a Manchester lawyer, to represent them at the hearings. At this point their principal concern was not to oppose the plant, but to assure that the provisions of the law were carried out as intended.

The Audubon Society of New Hampshire (Audubon) had been active in Seabrook Station since the inception of the project in 1969. Their initial concern arose because of their ownership of 42 acres of salt marsh within the boundaries of the proposed site. Public Service was trying to buy this land. Audubon, realizing the potential destructiveness of the plant to the environmentally sensitive and valuable marsh, felt an obligation to the donor to see that it was protected. They entered the hearings without a lawyer, presenting testimony on the environmental problems the plant, especially the cooling system, could create.

The Seacoast Anti-Pollution League (SAPL) is an independent group of coastal residents interested in protecting New Hampshire's small bit of coast line. Seabrook Station did not fit with their conception of how this area should be used. They were not at this point opposed to the plant, but only the site chosen for it. Through dues paying memberships and various fund raising activities, they were able to raise enough money to hire legal help,and the growth of a strong opposition to the site and eventually the plant and nuclear power in general was begun.

Elizabeth Weinhold is a working mother and a resident of nearby

Hampton. She originally became concerned with Seabrook Station due to its potential environmental destructiveness. However, reading and studying about the plant led her to an entirely different area of concern. The seismic history of the plant site indicated a potential for a dangerous release of radiation unless adequate measures were taken to prevent damage to the structure in the event of an earthquake. "Earthquake Dolly" as she came to be known spent much of her spare time in the library reading government reports on seismology. She could not get legal counsel, so she pursued the issue before the SEC on her own as she continued to do through the federal hearings which were to follow.

The SEC hearings followed an adjudicatory process resembling a courtroom hearing. Evidence was presented both written and orally. This evidence could be questioned either through written interrogations, requiring response from the party in question, or through cross-examination of witnesses.

The hearings began on June 19, 1972. Almost a year later, on May 25, 1973 they ended. Thirty-two days of hearings involving some 120 witnesses and statements by individuals encompassing over 5800 pages of transcript transpired in the interim. The majority of the testimony focused on the environmental aspects of the project, but other issues such as the seismic problem and the routing of transmission lines also were raised. However, some basic questions which were to create quite a stir in the future, such as the financial qualifications of the utility and the need for the power from Seabrook Station, were not raised.

Shortly after the close of the hearings, the Site Evaluation Committee approved the Seabrook site by a vote of 8 to 4. The accompanying decision was a simple statement of the procedural requirements of the law and an affirmation that they had been carried out. Immediately the Forest Society challenged the decision and was joined in their appeal to the New Hampshire Supreme Court by the Audubon Society. The brief accompanying the appeal claimed that the decision "was unreasonable, and not supported by the evidence presented." It also contended that the Forest Society and Audubon were denied "adequate public voice in the decision and due process of law in the Committee hearings" and that "the Public Service Company failed to establish that the proposed plant would avoid all unreasonable adverse effects . . . " [4] Oral arguments were heard on both sides. The Attorney General of New Hampshire took an unprecedented position in this case by not defending the action of the agency. Rather he filed a friend of the court brief supporting,at least in part, the contentions of the two conservation groups.

In October, 1975, the court upheld the claim that the SEC did not support its decision with sufficient evidence. Two months later, the Site Evaluation Committee issued a decision backed by evidentiary findings. Although the Forest Society and Audubon were still not satisfied they decided to drop the fight; they felt that they had already made their point.

One significant change in the design of the plant seems to have come about as a result of this state level review, that being in the design of the cooling thermal discharge system discussed earlier. The change from an open channel intake and pipe discharge to the present bedrock tunnel system was made at this point. This change results in a greatly increased cost of the plant to Public Service, but is less detrimental to the environmentally sensitive salt marsh and near shore ecosystem.

NUCLEAR REGULATORY COMMISSION

While the hearings before the State Site Evaluation Committee were still in progress, preparations were begun by Public Service to obtain a construction license from the Atomic Energy Commission (AEC).* The license is subject to review under both the Atomic Energy Act and the National Environmental Policy Act. The first of these is generally concerned with radiation safety aspects of the plant and provides a rigid structure in which the public can become involved. The latter deals with all environmental aspects of the project and likewise allows for public review.

Public Service applied to the AEC for a construction permit in March of 1973. This initial application was denied for lack of sufficient information. Shortly thereafter the Environmental Report and the Preliminary Safety Analysis Report were submitted by Public Service and the application was accepted for processing. These two reports with their subsequent amendments became the source of information upon which much of the subsequent proceedings were based. During this initial phase of the licensing process the utility worked very closely with members of the AEC staff to assure the completeness of the application.

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* The licensing duties of the AEC have since been transferred to the Nuclear Regulatory Commission.

Once the application was accepted numerous independent reviews of it were begun, each allowing for various degrees of public input. Initial preparation for the major display of public participation, the Atomic Safety and Licensing Board (ASLB) hearings, also began at this time.

Except for the environmental impact review process, the public involvement in the early stages of the application review can be described as minimal at best. The AEC staff review of the safety aspects of the project which culminated in the publication of the Safety Evaluation Report in August, 1974 involved one meeting in which members of the public were asked to express their concerns about the project. The other major safety review was done by members of the Advisory Committee for Reactor Safeguards (ACRS). The ACRS is an independent group appointed by the AEC to "advise the Commission with regard to the hazards of proposed or existing reactor facilities and the adequacy of proposed reactor safety standards." [5] The review by this committee was once a closed proceeding. Efforts by interested parties have resulted in some of the sessions, including meetings with the NRC staff and the utility representatives, being open to public review. However, the agenda for the one session of the ACRS held in the vicinity of the plant allowed for a total of one hour to be allocated to public comments over the entire two days of the meeting.

Some concerned citizens also submitted written testimony to the ACRS. The major provisions of the ACRS report to the AEC staff was the need for an adequate evacuation plan for the area in case of a potentially harmful accident and for further study of seismic characteristics of the site. Both of these issues are still under contention.

The first significant opportunity for public involvement provided by the NRC licensing process was through the review of the Environmental Impact Statement required under the National Environmental Policy Act. The Draft Environment Statement (DES) was prepared by the AEC and submitted to the public in April, 1974; any interested party was invited to comment. Comments were received by all parties who were later to participate in the ASLB hearings, numerous federal agencies and many other organizations and individuals.

Almost every conceivable issue was brought into question. The issue which seemed to be given the greatest attention, at least as indicated by the number of respondents, was the routing of the transmission lines through the Cedar Swamp, Pow Wow River area. This area is environmentally critical, containing a dense stand of the relatively rare Atlantic white cedar. The Final Environmental Statement contains copies of forty-six letters, many of them hand-written, signed by seventy-six individuals, all in support of an alternative route around the swamp. This response was in large part due to a media campaign launched both by Ron King, the director of the Society for the Preservation of New Hampshire Forests, and Warren Whitcomb. The Forest Society owns much of the land to be transversed by the proposed route; Whitcomb is an adjacent land owner who first learned of the Seabrook plant when he allegedly discovered that his trees were being cut down by Public Service surveyors without his permission. Numerous articles and letters appeared in many of the local papers urging people to respond in writing to the DES.

Although the issue is not at this date totally resolved, the letters may have had an effect. The reply to these comments by the AEC staff in its final Environmental Statement concurred with the sentiments of these individuals:

> . . . the staff considers preservation of the integrity of the Cedar Swamp natural area, in concert with removal of any threat of construction of overhead transmission lines across sections of the Hampton-Seabrook Marsh [an added benefit of the proposed alternative route], sufficient compensation for any additional costs likely to be incurred in implementing required alternatives. [6]

Once all of these reviews were completed the real showpiece of public participation could begin, the Atomic Safety and Licensing Board hearings. During the preceding months extensive preparation for this big event had already been taking place, in the form of prehearing conferences. The first of these was held on October 29, 1973 and was attended by most of the major actors who were to parade through the hearings in the months to come: the ASLB itself, the NRC staff, representative of Public Service, and the intervenors.

The ASLB is a three member board appointed by the NRC whose primary role is "to determine whether the regulatory staff's [NRC's] review has been adequate to support the findings that must be made for issuance of the construction permit." [7] Seabrook hearings chairman, Daniel Head, a lawyer, was responsible for assuring that all procedural requirements of the hearing were met. The other two members added breadth of knowledge to the ASLB: Dr. Marvin Mann is a nuclear scientist with the NRC and Dr. Ernest Salo is a professor of the Fisheries Research Institute at the University of Washington.

During the five days of prehearing conference which spanned a period of greater than one year, three important decisions were made: (1) what the key issues in the proceedings would be, (2) which of those parties who requested to participate would be granted intervenor status and (3) the schedule for further actions.

"Intervenor" is the title given to any person who desires to participate in the hearings, files a petition to do so and meets the requirements of acceptance. In the Seabrook case eight individuals or groups participated in the ASLB hearings in this capacity:

- Seacoast Anti-Pollution League (SAPL)
- The Audubon Society of New Hampshire (Audubon)
- The Society for the Protection of New Hampshire Forests (Forest Society)

- New England Coalition on Nuclear Pollution (NECNP)
- Elizabeth H. Weinhold
- Donald B. Ross
- The Attorney General of New Hampshire
- The State of New Hampshire

No one was denied acceptance, but there was some disagreement as to the dual role of New Hampshire. Donald Stevers who as the Assistant Attorney General represented both the Attorney General and the State, felt this position essential: If the State was represented only as such there was fear that the wishes of Governor Meldrin Thompson, a strong supporter of the plant, would prevail. The dual role allowed the representation of some of the other interests of the public as well. The Commonwealth of Massachusetts entered the proceedings as an "interested state," giving it a much less active role.

Many of the participating groups and individuals were the same as had participated in the SEC hearings. In addition, others were gearing up to join the fight. The New England Coalition on Nuclear Pollution (NECNP) is a regional organization representing some 106 groups and 50,000 persons including the Appalachian Mountain Club, the New Hampshire Federation of Women's Clubs and the State Medical Society. They had had a great deal of previous experience in fighting the construction and operation of nuclear power plants around New England. This experience made them a dominant figure in the hearings which were to follow.

Donald Ross is a commercial fisherman from Gloucester, Massachusetts who was greatly concerned with the effects the plant would have on his income. In addition, the whole Ross family was quite concerned about the closeness of the plant to their home and the possibility of a large scale nuclear accident. Donald's brother Norman, a lawyer for the city of Boston, represented the family in their efforts to stop the Seabrook plant.

Other Massachusetts residents in Salisbury and Newburyport were becoming somewhat concerned about this large nuclear plant to be built only three miles from the Massachusetts border. The Commonwealth of Massachusetts, seeing that the intervenors were in strong opposition to the plant,entered only as an "interested state," but according to an Assistant Attorney General it definitely wanted to "keep its eye on something that big."

These intervenors brought with them many concerns about the plant. Table 2 shows the results of the prehearing conferences as to which issues would be discussed by which intervenors. As can be guessed from this long list, the participants were preparing for a long battle.

The hearings began on May 27, 1975, in Nashua, New Hampshire, with a session for "limited appearances." Interested citizens who do not wish to participate as full intervenors may present testimony either orally or in writing in this way. Immediately a squabble was started over the location of the hearings being 50 miles inland from the site. The intervenors allegedly had been given no previous indication that the hearings would be held this far away. The ASLB had

Issues Pertinent to the Atomic Energy Act	Intervenor(s)
Technial qualification of applicants	NECNP
Financial qualification of applicants*	NECNP, Ross
Seismic design criteria*	NECNP, Weinhold
Evacuation plans and site suitability*	NECNP, Weinhold
Adequacy of radiation monitoring program	State
Adequacy of safety considerations related to cooling water system	NECNP
Conformity of Emergency Core Cooling System with requirements	NECNP
Conformity of radioactive effluent releases with regulations	NECNP, State
Inadequate research and development by applicant	NECNP
Issues Pertinent to the National Environmental Policy Act	
Impact on tourism	Weinhold, SAPL
Aesthetics	State, SAPL
Archaeological significance of site	State
Impacts on wildfowl	Audubon
Decommissioning of the plant	Audubon
Impact on public lands and access to marsh	State
Impact of transmission lines*	Forest Society
Tubidity and construction run-off	Audubon, Forest Society
Aquatic effects of cooling system*	Audubon, Forest Society
Effects on clams and clam flats	SAPL
Commerical and sport fishing	SAPL
Need for power*	NECNP, Ross
Reliability of the plant	NECNP
Consideration of alternative energy sources	NECNP, Ross
Consideration of alternative sites	Audubon, Forest Society
Final cost-benefit analysis	State, NECNP

*Issue given particular emphasis

TABLE 2
ISSUES PRESENTED FOR DISCUSSION AT THE ASLB PREHEARING CONFERENCES

chosen the site claiming that there was no suitable site in the coastal area. Guy Chichester, president of SAPL, offered to take the board on a tour of places along the coast which he believed to be adequate, and Chairman Head agreed to go. After 14 days of hearings the meetings were moved to the Seabrook High School gymnasium. The move took place on an unusually hot day and again with allegedly little notice. The public turn out was small. Thomas Dignan, attorney for Public Service, seized the opportunity to comment on the lack of public concern. After two days in Seabrook, they were moved back to Nashua. Subsequent hearings were held there as well as in New Castle and Hampton, two nearby coastal communities. Little skirmishes of this nature, regarding peripheral procedural issues, often caused deviation from the substantive issues at hand.

Like the SEC hearings, the procedures of the ASLB adjudicatory hearings follow those of a trial. Each party (the NRC staff, the utility and the intervenors) is allowed "to present such oral or documentary evidence and rebuttal evidence and conduct such cross-examination, as is required to fully disclose the pertinent facts." [8] The greatest majority of the testimony is "canned," that is, submitted in written form, and all that could be heard by an observer would be the cross-examination.

The NRC staff plays a role in the hearings identical to that of the utility and the intervenors. They present witnesses to defend their position and cross-examine the witnesses of other parties holding both favorable and contrary positions. However, during the Seabrook hearings NRC staff sided with the utility on almost all issues. The only issue of significance on which they sided with the intervenors was the routing of the transmission line through the Pow Wow River-Cedar Swamp area mentioned previously.

On October 21, 1975, after 45 days of hearings had been completed, Daniel Head, chairman of the ASLB announced his resignation from the Board to join the Federal Energy Administration. He was replaced the following day by John Frysiak, who like Head was a lawyer with the NRC. This action created a great deal of discontent among the intervenors. Head had shown acceptance of many of the intervenor's contentions. One in particular stands out. An attempt was made by Robert Backus, attorney for Audubon, SAPL and the Forest Society, to get the hearings suspended until the EPA made a final decision on the cooling system permits pending under their authority. Head ruled in favor of this move, but was overruled by the other two members of the Board. When it was revealed that Thomas Dignan, attorney for Public Service, had provided a recommendation for Chairman Head's new position with the Federal Energy Administration, the intervenors became suspicious. Many of the rulings of Chairman Frysiak in subsequent hearings went contrary to the intervenor's wishes and are being challenged before the Atomic Safety and Licensing Appeal Board (ASLAB). One of these had to do with a witness, the financial director of the New Hampshire Public Utilities

Commission who had done an independent assessment of the cost and need for the plant. His conclusions were contrary to those of Public Service. SAPL and Audubon requested that he be subpoenaed, a necessary step to insure the witness against outside pressure. Chairman Frysiak, in a move that outraged the intervenors, denied the subpoena. Rulings such as this only added fuel to the suspicion that the chairmanship was far more deeply rooted than a decision by one individual to take a different job.

Finally on November 8, 1975, almost six months after they had begun, after fifty-nine days of hearings and 11,835 pages of transcript had been compiled, the hearings ended. But the intervenors were not satisfied, and tried to have the hearings reopened on a number of issues. NECNP asked that the hearings be reopened to allow for cross-examination of the NRC staff's witnesses on geology and seismology issues. SAPL and Audubon wanted further opportunity to discuss the issue of the need for power. This latter argument was supported by the action of two of the utilities involved in the construction of Seabrook Station. Shortly after the end of the hearings, Northeast Utilities announced that it was putting its twelve per cent share in Seabrook Station up for sale and was delaying the construction of its Millstone 3 Reactor in Connecticut. In addition, United Illuminating Company was trying to get its participation reduced from twenty to ten per cent. [9] On February 2, 1976, the ASLB granted the NECNP and SAPL/Audubon requests. However, a third request to discuss the overall balancing of the costs and benefits of the plant was denied. So the hearings were reopened for a week. Finally, on February 27, 1976, the hearings again were closed.

The reopening of the hearings raised the ire of Governor Meldrin Thompson. He was quoted as saying that he was given "assurance by a presidential aide almost a year ago, that the Seabrook permit would be issued by September of 1975." [10] This statement has caused a great deal of political furor, some intervenors claiming that it indicates a clear case of corruption. An effort to subpoena the governor, to get him to confess under oath who his sources were, was denied. It, too, is being appealed.

An initial decision was four months in coming. On June 29, 1976, the ASLB, by a vote of 2 to 1, recommended that the NRC grant the construction permit. Ernest Salo, the marine biologist, in an unprecedented move, dissented:

> In summary, I do not believe that, in the long run, it is to the best interest of the nuclear energy program (or any other energy program) to take a site that is not suitable and "backfit" it at all costs. This is especially true when after all precautions have been taken, more than just a chance remains for a significant environmental impact . . . [11]

Except for the dissent by Dr. Salo, the decision angered all of the intervenor groups, and not only because it went contrary to their wishes. They feel that it completely ignores their side of the evidence presented and that it does not reflect the huge amounts of time, money and effort that went into the hearings. The only changes from the plans which were proposed by Public Service was a slight rerouting of the transmission lines and a slight upgrading of the seismic design of the plant. But even the intervenors who argued these issues are not satisfied. The Forest Society still feels the transmission lines can be routed through already existing corridors; Ms. Weinhold and NECNP believe the seismic design to still be inadequate.

The intervenors wasted little time in taking the next steps available to them. On the same day, July 9, 1976, that NRC issued a construction license, the Atomic Safety and Licensing Appeal Board (ASLAB) received a request from SAPL and Audubon to halt the construction while they appeal the decision. The request was denied, but their efforts were continued to the Circuit Court of Appeals, where the case is now pending. The criteria the court must use for deciding whether the project will be stopped are: (1) whether the intervenors can show that it is likely to win their appeal, (2) whether the intervenors will be irreparably harmed if the construction proceeds, (3) whether cessation of construction will substantially harm other parties, and (4) what the public interest dictates.

The appeal mentioned in (1) above is a request to the ASLAB to review the actions and decision of the ASLB. All of the intervenors including the Commonwealth of Massachusetts, joined the appeal, except for Elizabeth Weinhold, who no longer can afford the time and money to keep going. In addition, during the course of the ASLB hearings, NECNP joined forces with her to attack the earthquake potential issue and is planning to continue along those lines.

The decision is being challenged on almost all of the substantive issues, most importantly the financial qualifications of the utilities involved, the need for power, the need for a detailed evacuation plan and the environmental impact of the discharge system. The ASLAB which will make the final decision in the case is composed of Alan S. Rosenthal, chairman, Michael C. Farrar, and Dr. John H. Buck. All material supporting the intervenors must be filed with the ASLAB by September 3, 1976. After this there will be a response period during which the participants may respond to the contentions of the other parties. This will be followed by an oral argument by the respective attorneys before the ASLAB. Based on this the ASLAB will either issue a final decision or request that full hearings be reopened.

Besides the substantive issues which are being questioned, appeals are also being brought on numerous procedural issues. One of these is the conditional nature of the initial ASLB decision. It states that:

> [s]hould EPA require closed cycle cooling [i.e. cooling towers] for Seabrook, this Board finds such a requirement to be unacceptable for the Seabrook Site and accordingly, in this eventuality, denies the application . . . [12]

The State of New Hampshire is appealing this, claiming that it is not within the authority of NRC and is a usurpation of EPA's authority.

Three procedural issues are being raised by SAPL and Audubon through their attorney Robert Backus. One involves the change of chairmanship of the ASLB after 80-90% of the testimony had been presented. Since the original chairman, Daniel Head, who heard the greatest portion of the hearing, had no part in the decision a claim is being made that a mistrial should be ruled. The other two involve the issuance of the two subpoenas to the Public Utilities Commission financial director and to Governor Thompson as described above.

If the appeals fail and the ASLAB issues its final decision in favor of the plant, the efforts of the intervenors will move into the court room, where many of the procedural issues discussed above will be argued. It is this action which many of the intervenors feel gives them the greatest opportunity for success. But they also feel that it is which federal judge hears the case that will make the difference. Different people when confronted with the same information will often draw different conclusions.

In addition Public Service still must apply to NRC and receive an operating license. They probably will not take steps in this direction until a year before the plant is ready to begin operation. Although the public hearing process described above is not mandatory at this stage as it is for the construction license, intervenors can and in all likelihood will attempt to get such hearings held.

ENVIRONMENTAL PROTECTION AGENCY

As prehearing conferences and ACRS meetings were being held and preparations being made for the ASLB hearings, Seabrook Station entered another phase in the licensing process, and another forum for public input began. On August 1, 1974 Public Service filed its application with the Environmental Protection Agency (EPA) for the permits necessary under the Federal Water Pollution Control Act Amendments of 1972. The permits which generated the controversy were those required for the intake and discharge of the cooling water. The design of this system, which involves two long tunnels, drilled through the bedrock underlying this area, has been described previously. In essence what the law says is that the applicant, in this case Public Service, must show that the discharge of the heated water (824,000 gallons per minute at a temperature 38° higher than the intake temperature) will not be injurious to the balanced biological community of fish, shellfish and wildlife present in the water. In addition, the intake structure must be designed, located and constructed in such a way as to minimize adverse environmental impact.

The primary issue of concern is the entrainment of aquatic organisms in the cooling water intake and discharge streams. Some organisms in the vicinity of the intake are too small to be filtered out by the screen provided for this purpose. They are carried through the plant along with the cooling water and directly exposed to the elevated water temperature. At the Seabrook Station it is being assumed that all organisms so entrained will be killed. The two organisms of most concern are the soft shelled clam and the American lobster, both susceptible to this effect while in their larval state, that stage of life just after birth. Estimates of loss of these organisms by the applicant's consultants ranged from three to five per cent of the population in the area. The real question is, is this an acceptable level? In the intitial ASLB decision Frysiak and Mann decided it was; Salo disagreed. It has yet to be seen how the EPA will rule.

The first instance of public input into the EPA permitting process was at a public hearing held on January 30, 1975. This hearing is not mandatory, but is often used by EPA for large projects where they suspect a great deal of public concern. The public hearing is in essence an open forum whereby an interested person can present his views either orally or in writing. The discussion often strayed from the major issues of the impact of the thermal discharge system to include a broad spectrum of issues from the dangers of nuclear power to the number of jobs which will be created by the project.

Following these hearings, EPA issued a set of "Determinations" which in essence stated that a "once-through" system (as opposed to the use of cooling towers, ponds, etc.) was adequate to meet the requirements of the law, but left the exact design and location of the intake structure for future determinations. This point is critical since it is where the intake is located which will determine in large part how many organisms will become entrained and thereby killed.

EPA regulations allow for such determinations to be challenged through an adjudicatory hearing process similar to the ASLB hearings. The Seacoast Anti-Pollution League and Donald B. Ross took such action and filed their appeals. EPA granted the requests, as well as further requests by Public Service and the Attorney General of New Hampshire to be admitted as participants.

Before the adjudicatory hearings could be held on the determinations EPA held a second public hearing on the previously deferred issues relating to the intake structure, and a second set of "Determinations" were issued. These determiantions concluded that the intake structure should be located approximately 4,000 feet farther out into the ocean than the location Public Service was proposing. SAPL again requested adjudicatory hearings and the request was again granted. The Audubon Society, the Attorney General and Public Service were also admitted as participants. [13]

EPA decided to combine the two adjudicatory hearings into one session which was held from March 23 through April 2, 1976. The format of the adjudicatory hearings differs slightly from the ASLB hearings. Evidence can be presented and interrogated in the same way and witnesses cross-examined. An administrative law judge, Mr. Thomas Yost, presided over the hearings. His role is to make procedural decisions on such issues as the admissibility of evidence and to compile the record of the case. He does not, however, make the decision; this authority rests with the EPA Regional Administrator, John McGlennon. But in the case of Seabrook, McGlennon sent the record back to Yost and asked for a recommended decision. Yost declined, claiming he did not have the time to do so.

The overall appeal procedure described above has been and is still being challenged. The problem arises because McGlennon, as Regional Administrator, made both the initial determinations and is responsible for the decision upon appeal. Robert Backus, attorney of SAPL and Aububon, feels the "appeal from McGlennon to McGlennon" may well be illegal.

The adjudicatory hearings are much more rigorous than the public hearings and because of their quasi-judicial nature the participants are required to stick more closely to the issues at hand. There was some disagreement over the wisdom of entering into this phase of the proceedings. Mr. Donald Stever, representing the Attorney General of New Hampshire felt that the determinations made by EPA were the best that could possibly be hoped for. During the proceedings he therefore took the position of strongly supporting the EPA position. He feared that perhaps reopening the question might give Public Service a chance to argue for moving the intake structure shoreward. This change would reduce their costs while probably causing an unquantifiable, but greater, percentage of organism mortality. His fears were partially fulfilled by Public Service entering the hearings and presenting a large majority of the testimony. Whether the decision will justify these fears is yet to be seen.

Contrary to this, many of those opposed to the plant feel the move was a good one. They have since been reinforced by the conditional ASLB decision and are hoping that the EPA will follow the lead of Dr. Salo's dissent.

One of those accepted as a party to the EPA adjudicatory hearing, Donald B. Ross, the Gloucester, Massachusetts fisherman, did not appear, nor did he present any written testimony. His brother, Norman, who was to represent him in the hearings is a legal counsel for the city of Boston. At the time of the hearings he was involved in a million dollar case for the city. Opposition to Seabrook Station is something which of necessity the Ross family must do in their spare time. In this instance their working obligations pre-empted their ability to participate.

U. S. ARMY CORPS OF ENGINEERS

The third federal agency having permitting authority over the construction of Seabrook Station is the U. S. Army Corps of Engineers (Corps). Under the Federal Water Pollution Control Act and the Rivers and Harbors Act of 1899, the Corps is given responsibility over all dredging and spoil disposal operations and also any construction activity to be undertaken in navigable waters. Four such permits are required by Public Service: (1) for the drilling of the cooling system tunnels, (2) for the construction of a barge unloading dock at Seabrook Beach to facilitate the transport of large reactor components to the site, (3) for the construction of a discharge structure in the adjacent river to handle storm water run-off from the site, and (4) for the construction of the three transmission lines, which will cross numerous streams and rivers.

Two days, May 26 and 27, 1976 were scheduled as dates for a public hearing to discuss the permits. Compared with the other proceedings, it was a minor event. Only seven people provided written copies of their oral testimonies although several others made oral comments from the floor. All of the emotional issues both for and against once again dragged into the open as all of the groups involved sent representatives to speak their piece. One participant described the Corps representative as having "listened politely" but seeming "very bored." The hearings were completed on the first day. The decision from the Corps is still pending.

OTHER ACTIVITIES OF CONCERNED CITIZENS

Not all of the actions of concerned citizens take place in the hearing rooms and the courtrooms. Some people both for and against the plant feel there are other ways to be effective, perhaps more effective.

Warren Whitcomb's only formal actions in the licensing process described above were limited appearances at the ASLB hearings. Although most of the appearances of this type were short, Whitcomb's often went on for 40 type-written pages; it was "a means of venting frustration." He spent most of his time dealing through the media.

His campaign to protect Cedar Swamp has already been described. In response to one of those articles on the subject of the Swamp, a reader wrote that that was just a very small part of the problem. He began to study everything about the project and soon became opposed to the Seabrook plant on the basis of nuclear dangers. He appeared on radio and television, but feels the newspapers were the most effective. Since it provides continuity, people can be confronted repeatedly with the same issues. He also confronted the agencies, both the NRC and EPA, directly by visiting their offices and questioning them on points he had discovered and studied. He feels that most of the time he talked to deaf ears, but that if you hit them often enough they may eventually ask themselves why he's doing it. After a couple years of up to twelve hours a day of studying and working to oppose the plant, he is contemplating his future efforts.

The Concerned Citizens of Seabrook is an offshoot of the Seacoast Anti-Pollution League. A small group of young adults and elderly residents, they collected enough signatures to have the Seabrook Station issue placed on the March 2, 1976 ballot in a non-binding referendum. The plant was voted down 768 to 632 by the residents of Seabrook. Public Service's response to the vote was that "[i]t was a non-binding referendum - a straw vote. Since 1969, we've received cooperation from the town, in spirit and in fact. Do you expect us to disregard the past seven years of planning?" They also charged the Concerned Citizens with "circulat[ing] misleading information designed to arouse emotion." [14] The opponents of the plant argued that it took a secret ballot to get at the true feelings of the people, that people are afraid to speak against it out in the open. Members of the Concerned Citizens have allegedly been threatened with anonymous phone calls; one member had his car break down due to a foreign substance -- sugar, sand, or something -- in the engine. He hasn't made any direct accusations, but he is highly suspicious. [15]

In more direct actions, Ron Rieck spent 36 hours in the dead of winter perched on a platform constructed on the meteorological tower at the site to draw attention to his opposition of the plant. In April, 1976 the Greenleaf Harvesters Guild led an eighty-five mile march from Manchester, New Hampshire to Seabrook. On the last day the march was joined by about 300 other marchers from around New England. And most recently eighteen people were arrested for trespassing during a non-violent occupation and tree planting at the site. The New Clamshell Alliance which organized this latter action views it as only an indication of things to come.

Lest it be believed that all activities by citizens are in opposition to the plant, a description of the New Hampshire Voice of Energy is in order. Mrs. Madeline Thompson, one of the founders of the group first heard about the Seabrook plant after becoming outraged over a rate increase. She and a friend decided to "financially destroy Public Service" by not paying the increase. She was asked if she would like to come in and talk about it with a Public Service representative. It was then that she was told about Seabrook. After numerous meetings with Public Service personnel she became convinced of the economic and other advantages of nuclear power and the need for Seabrook Station. She also realized that there was no vocal public support for the plant. Being the wife of a member of the Plumbers and Pipefitters Union, she saw the possibility of a "common goal" pursuit being worked out between Public Service who wants the plant and the union which could use the jobs created. As it was too late to enter the formal licensing proceedings, except in limited appearance, this pro-Seabrook group concentrated its effort on education (movies and question and answer sessions at union halls around the State) and political activities. Mrs. Thompson feels a measure of their success is the 22,000 signatures they got on form letters sent to various elected and agency officials. In addition she believes that their 520 dues paying members and 198 unemployed free members are a sign of the support that truly exists for the plant in the State of New Hampshire.

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Over four years have passed since Public Service Company first began the long, arduous process of getting the necessary permits to build Seabrook Station; years of planning had preceded that move. Many months have been spent at hearings with intervenors and other members of the public. Protests have been waged, arrests have been made. Future strategies to fight the plant in the courts, in the hearing rooms and in the streets are being formulated. And after all this the result can probably be described in one word -- frustration. In it perhaps the closest one can come to expressing a common feeling shared by all or most of the participants.

Beneath the talk of salt marsh destruction, thermal pollution, earthquake risks and the need for power there seems to lie two issues which though never explicitly discussed play a very dominant role in the proceedings. The first of these all pervasive issues is the trust of public decision makers. One participant, who strongly supports the plant, feels such trust is essential; it is the whole basis of the governmental system in which we live. In contrast, many, especially those who have felt some degree of objection to the plant, are at best skeptical, if not downright cynical. In the eyes of these skeptics, the credibility of the NRC as a regulatory agency is seriously doubted.

Two events in the course of the hearings led to the further demise of the credibility of the agency - the issue of the change in chairmanship of the ASLB and the whole incident with Governor Thompson. The first would probably not have had as much effect had the two chairmen not acted so totally different toward the intervenors. Chairman Frysiak has been severely criticized in not the kindest of terms, and to many of the opponents of the plant Chairman Head's "opportune departure" warrants careful investigation. Likewise with

Governor Thompson's statement which seriously hints of political influence in the agency's decisions.

The second all pervasive issue is the whole nuclear debate: whether we should or should not be pursuing nuclear technology as a means of providing our energy needs. Public Service and the NRC obviously think that we should, and believe that other viable alternatives do not exist. Many others, whether out of fear, justifiable or not, or out of a conviction that the risks, no matter how small their probability of occurrence, are too great, believe that a search for alternatives is essential. They are willing to bear the consequences of a non-nuclear future in order to avoid these risks: the very small probability of a major accident with potentially grave results, the problems of long term storage of radioactive waste materials and the possibility of sabotage and terrorist activities involving nuclear plants or radioactive materials. Hence though it was never actually openly discussed during the proceedings except at limited appearance (non-adjudicatory) hearings, an anti-nuclear sentiment did form the basis of much of what went on. Some of the intervenor groups who originally entered the hearings on other issues became equally as committed to the anti-nuclear campaign. Thus while much of the discussion and debate was couched in terms of thermal discharges and transmission routes, much of the real opposition was to the use of nuclear technology. A situation such as this truly creates frustration, but it is one which may well not be avoidable.

Obviously a forum is needed to debate this issue, but one cannot be so naive as to believe it is one that will be totally resolved for sometime to come. It has been suggested that Congress reopen the debate and re-evaluate the Atomic Energy Act of 1954 or that it be open to public referendum. But on an issue this critical, no matter what the outcome, both sides will want to continue to have their say. Some people associated with the industry feel that it may not even be an issue, that is has already been resolved. Many others would beg to differ.

In light of these two very basic differences, what follows must be viewed with at least a scant eye towards the larger picture. But nonetheless, a comparison of the two general formats for public participation, the open forum-legislative type public hearings and the adjudicatory hearings, can and should be pursued. Participant comments on the first of these ranged from "possibly the way to go" to "a means of getting the general feeling of the public" to "worthless." As there are differences of opinion over issues, so too are there differences of opinion over process.

The former opinion is generally held by one who has faith in those making the decisions to do an adequate job of examining the evidence on both sides of the issues at hand and to perform the balancing required to reach a decision. All that is necessary is to feed them the evidence. Those who do not hold this position see the need to bring the witnesses under cross-examination. Only through this technique can issues which are not black and white (and even the technical issues are viewed in this light) be reasonably and thoroughly examined. Those who feel these public hearings to be worthless see mainly the chaos which generally accompanies them. Issues other than those directly bearing on the decision are often raised, often to the extent that they seem in fact to be the major concern.

The adjudicatory hearings thus have two perceived advantages: they allow for cross-examination and they provide a forum which is more easily focused on specific issues. They have, however, been termed a "lawyer's game," with the lawyer's using all the tricks of a skilled trial lawyer (Perry Mason?) to dice up opposing witnesses and win the case for his/her client. And it is argued that the decisions thus get made on whether the case can stand up in court and not on the technical evidence presented.

The role of the lawyer in the adjudicatory hearing is also subject to debate. Some believe that though the lawyers generally have a good time, it is really the technical people, the engineers, who should be out on the firing line. And perhaps with the addition of a few skills the engineers could even function in an adversarial process without lawyers. Others believe that the lawyers are needed to provide an orderly proceeding.

A final general question pertinent to both of these forums is who should decide? Many feel that the issues are so complex that it is essential to have a panel of experts with expertise in various areas make the decision. Others feel that any issue can be posed in terms understandable to a reasonably educated person and that such expertise is not necessary. In fact it has been suggested that such expertise actually biases the decision. In any event, if public input into the decision is desired, serious effort in this latter direction must be undertaken.

Obviously neither of the two existing formats are ideal (although one participant described the adjudicatory hearing procedure as "fairly sophisticated. . . probably one of the best"), and others need investigation. One suggestion is to go in the direction of less formality and to set up opportunities for more informal communication between the various participants: the utility, the regulatory agencies and the concerned public. Although many participants expressed the willingness to work together, the only evidence that anything along these lines was attempted was between the NRC staff and Public Service, and between Public Service and the New Hampshire Voice of Energy. That these groups came out on the same side of all of the important issues, however, does not naturally lead to the conclusion that it worked. It may well have been that their philosophical similarities were in fact what allowed them to work together in the first place.

Aside from these general issues, many specific gripes were made relative to the processes followed during the licensing of Seabrook

Station. The intervenors feel that they are engaged in a David and Goliath struggle. The one complaint about the process as it presently exists which is heard over and over is the inequitable distribution of financial resources between the utility and the intervenor. The intervenor must depend on dues paying memberships, donations and fund raising efforts such as guest speakers and craft sales. By comparison, the utility could afford to spend inordinate amounts of money to do studies and pay witnesses and then pass these costs on to the energy consumers. The result is that Public Service and to some extent the NRC staff were able to parade out witness after witness to back up their testimony. The intervenors on the other hand had to depend on many fewer experts and on their ability to cross-examine the other parties' witnesses. Direct testimony always seems more impressive than trying to pick somebody apart in cross-examination.

During the course of the ASLB hearings, the intervenors made requests to the Board in an attempt to get financial and/or technical assistance from either Public Service or the NRC. Each time the motion was denied. In addition the experts that the intervenors could get to testify were often questioned as to their credentials; according to one participant it became a battle of who had what college degrees. Chairman Frysiak's refusal to subpoena the financial director of the Public Utilities Commission is an example of one such battle which the intervenors lost.

The only sign of any attempt to remedy this inequitable situation was that Public Service did provide the intervenors with a copy of the daily transcripts of the ASLB hearings. For this the intervenors were grateful. Without it they simply would not have been able to participate, and they well may not have been able to afford it on their own. In addition, in order to overcome this, the intervenors worked closely to feed each other information and to share witnesses. However, they did not feel that they could in any way come close to gathering the technical army that Public Service possessed.

The counter argument from the utility is that if these groups truly had the support of the people, they would not have this problem. They do not see the intervenors as representative of the public, but only as a very small, vocal minority. They point to small audience attendance at hearings as further evidence of this. In addition, the utility does not feel that those involved make any significant contribution. One person said that he felt that the NRC staff was by far the toughest advocate the utility had to handle and that he did not see one safety question raised by the public which had not been previously dealt with by the staff. Another said that he saw no increase in safety, no reduction of environmental impact and no reduction of liability as a result of the intervention. They see the intervenors as just that, one who comes between to try to stall, delay and block the plant. And the delay costs them money; Public Service claims that they lose $333,333 for each day the plant is delayed.

The second most often heard intervenor argument against the process is that the decision is made before the intervenors have a chance to participate. The NRC staff and the utility have worked together for a long time insuring that the application is complete. Thus even though they feel they were influential in bringing about the change in the cooling system, the transmission line route, and the seismic design of the plant, the intervenors do not feel they had the opportunity to input into the real decision. Before they could be heard Public Service had obviously decided that the plant should be built and that it should be built in Seabrook, and the NRC staff was in definite agreement with the utility.

In this light is often raised the question of momentum, that by the time the public can get involved so much money has been spent by the utility in planning and studying the site, that it becomes uneconomical to change the course of action. One intervenor was totally outraged by the fact that the denial from the Atomic Safety and Licensing Appeal Board to halt construction pending review of the case contained reference to the fact that $73 million had already been spent on the plant for studies and engineering. He feels that this is totally irrelevant.

In a move to get earlier public participation into the process of energy facility planning, the same New Hampshire State law which set up the Site Evaluation Committee hearings also made it mandatory that all utilities present long range plans of proposed activities over the next five and ten years. These plans are subject to public review. In addition, the five year plans are to be discussed at public hearings. However, the law came along too late to include Seabrook in this plan review stage, and it will be some time before the process can be adequately evaluated. One criticism of it is that the plans as required by the law are not sufficiently detailed to make adequate determinations. It was suggested that specific criteria relative to the comparative cost/benefit analysis and a discussion of environmental costs at a number of alternative sites be included. Nonetheless, such actions appear to be a positive first step at alleviating the problem of the absence of early public participation and utility momentum.

Another interesting observation along these lines is the sequence in which issues were raised during the Seabrook case. Probably the first aspect of the plant which generated any significant response was its potential harm to the surrounding salt marsh. Almost all of the early debates centered on the environmental impacts, whether they be caused by the thermal discharge system or the routing of transmission lines. Although these issues were pursued throughout the case, others such as the seismic nature of the site and the need for a detailed evacuation plan for the area also arose. And finally, after the ASLB hearings had already ended once and were reopened, one of the two issues still under discussion was the need for power. Granted the actions of two utilities, other than Public Service, to attempt to sell their interest in the plant had a great effect on the decision. In fact those actions alone probably should have been enough to reopen the hearings, no matter what stage the project was in. Yet this sequence of issues which in a sense seems backwards from a logical planning process, still raises cause for concern. Is it solely a result of the occurrence of unpredictable events? Is this the thought progression followed by those involved: once all the problems have been seen, they begin to ask themselves whether they really need the thing in the first place? Or does the structure of participation lead the process in this direction? Perhaps it is a result of all three.

Another criticism raised by many intervenors is the role of the NRC staff during the ASLB adjudicatory hearings. As equal parties to the hearings along with the utility and the intervenors they are allowed to present evidence to back up their case and to question the evidence raised by the other parties both in favor of and contrary to their own opinions. However, their strong argument with the position of Public Service on almost every issue of significance definitely had the potential to bias the decision in that direction.

Still a further criticism heard by various participants on all sides of the issues was due to the inexperience of many of those actively involved. This was especially true in the State SEC hearings. The SEC has been attacked as having had neither the time nor the expertise to conduct adjudicatory hearings. They have since been provided with legal counsel to help them with procedural matters, something that caused a great deal of problems in the Seabrook hearings. Some of the lawyers who participated both in the State hearings and the ASLB hearings were also said to be inexperienced, a problem which added undue length to the proceedings. A particularly interesting case is that of Ms. Weinhold who participated in the ASLB hearings pro se, that is, on her own behalf. Although she had to learn the formal procedures of the sequence of questioning necessary to extract evidence during cross-examination, she feels she caught on rather quickly and got patient cooperation from then ASLB Chairman Head. Her participation, quite predictably, got sharply contrasting reviews ranging from a "waste of taxpayers' money" to "a marvelous exercise in individuality . . . the essence of democracy." One suggestion made was that there be a tightening up of these rules of practice which permit lawyers (and non-lawyers) to engage in activities they are unfamiliar with. Instead every unexperienced lawyer should be required to tag on with an experienced one to prevent some of the problems associated with their lack of familiarity.

The greatest complaint the utility seems to have about the process is the inordinate length of time it takes from the time they officially make their plans known to the time when they are actually allowed to start the project. They point to the great deal of redundancy and overlap in the various independent processes as the primary cause of this, along with the ability of the intervenors to use this to drag things out ad nauseum. The same issues that are discussed at the State level are rehashed at the Federal level; both NRC and EPA are debating the environmental issue. The latter two agencies have signed a memorandum of understanding in an attempt to alleviate this latter problem. However, it still has many bugs which need to be worked out. Not the least of these problems is when is it determined that EPA has issued a decision? Is it after they issue their initial determinations, or after these have been appealed to the agency and a second decision made, or not until all legal channels including the court system have been utilized? Then the problem becomes, when in this whole course of events should the NRC be allowed to issue their decision?

The problems are almost mind boggling. Should intervenors be funded? If so, what is to prevent them from becoming puppets of the source of the money? How can the various participants, loaded down with various degrees of trust or mistrust for each other, be brought together early on in the planning process? How can the inefficiency of inexperience be overcome without excluding potentially legitimate concerns? Should the process be streamlined, and if so, how? Perhaps most importantly, is any of this worth it? Or are the decisions so political that the whole process of public participation is nothing more than a theatrical sham?

APPENDIX A - CHRONOLOGY

New Hampshire Site Evaluation Committee

February 1, 1972	PSC files for Permit from N.H. Site Evaluation Committee (SEC).
June 19, 1972	SEC public hearings begin.
May 25, 1973	After 32 days of hearings, in which over 5800 pages of testimony were heard, the public hearings end.
July, 1973	SEC approves site by a vote of 8 to 4.
August, 1973	SPNHF and Audubon challenge SEC decision in N.H. Supreme Court claiming a failure to support its conclusions.
October, 1975	N.H. Supreme Court upholds SPNHF and Audubon contentions that SEC did not support its conclusions.
December, 1975	Commission complies with court order.

NRC Construction Permit

March, 1973	Public Service Company of New Hampshire (PSC) files for AEC (predecessor of NRC) construction permit.
May 7, 1973	Application for construction license rejected for lack of sufficient information.
June 12, 1973	PSC submits Environmental Report to AEC.
July 9, 1973	PSC submits Preliminary Safety Analysis Report to AEC. Application found acceptable for docketing by AEC.
October 29, 1973	First ASLB prehearing conference held.
March 11, 1974	Second ASLB prehearing conference held.

April, 1974	AEC submits Draft Environmental Statement for comment.
May 23, 24, 1974	Third ASLB prehearing conference held.
August 14, 1974	AEC staff releases its Safety Evaluation Report.
August 21, 22, 1974	ACRS subcommittee meeting held at Lamie's Tavern in Hampton, New Hampshire.
September 6, 1974 December 4-6, 1974	ACRS committee meetings in Washington, D.C.
December, 1974	Final Environmental Statement submitted by AEC.
December 12, 1974	Fourth ASLB prehearing conference held.
December, 1974	ACRS forwards findings to AEC.
May 27, 1975	ASLB adjudicatory hearings begin.
October 21, 1975	Daniel Head resigns as chairman of ASLB, John Frysiak takes over the following day.
November 18, 1975	ASLB hearings closed after 59 days of hearings accumulating 11,835 pages of transcript.
February 2, 1976	ASLB orders reopening of hearings for one week to reexamine two issues: - need for energy; - seismic activity in the area.
February 23-27, 1976	ASLB hearings reopened per order of Feburary 2.
June 29, 1976	ASLB approves the construction permit subject to "environmental requirements"; vote 2 to 1.
July 2, 1976	Audubon Society and SAPL file motion before ASLAB to stay the effectiveness of ASLB decision, i.e. to halt construction.
July 7, 1976	NRC issues construction license to PSC.
July 14, 1976	ASLAB denies motion of ASNH and SAPL to stay construction.
July, 1976	ASNH and SAPL file a motion in Circuit Court of Appeals to stay construction.

July, 1976	Intervenors appeal ASLB decision to ASLAB on numerous substantive and procedural matters.
September 3, 1976	Final day for filing supporting briefs to appeals.

EPA Permits

August 1, 1974	PSC files an application with Regional Administrator EPA for permit under the NPDES (supplemented on December 3, 1974).
January 30, 1975	Public hearing held for EPA permits regarding thermal discharge.
June 24, 1975	EPA makes Determinations that a "once-through" cooling system was appropriate; decision on intake structure left for future determination.
July 16, 1975	SAPL requests adjudicatory hearing on June 24 Determinations.
August 13, 1975	EPA grants adjudicatory hearings on thermal discharge.
August 25, 1975	Public hearing held to discuss issues related to the intake location and number of intake ports.
September 26, 1975	PSC requests to be admitted as a Party to the adjudicatory hearings.
September 30, 1975	Attorney General of New Hampshire requests to be admitted as a Party to the adjudicatory hearings.
October 24, 1975	EPA issues Determinations related to cooling water intake structure location and design.
November 10, 1975	SAPL requests adjudicatory hearings on October 24 Determination.
November 14, 1975	Audubon Society of New Hampshire requests to be admitted as a Party to the adjudicatory hearings.

November 25, 1975	EPA grants SAPL's request for adjudicatory hearings.
December 10, 1975	Attorney General of New Hampshire requests to be admitted as a Party to adjudicatory hearings.
December 17, 1975	PSC requests to be admitted as a Party to adjudicatory hearings.
January 1, 1976	EPA accepts Audubon, SAPL and PSC as parties to the hearings on the June 24 Determinations and the October 24 Determinations.
March 23, 1976 - April 2, 1976	Adjudicatory hearings held in Manchester, N.H.

At present (1976) no determination on the adjudicatory hearings has been issued by the EPA Region I Administrator.

Corps of Engineers Permits

	PSC applies for Corps of Engineers permits.
Ma[illegible]6, 1976	Corps of Engineers holds public hearings on dredging and construction in navigable waters permits.

At present no determination has been made regarding the granting/rejection of these permits.

Chronology of Events - Other Important Events

January, 1976	The second and third largest utilities (United Illuminating Company and Northest Utilities) announce a reduction in their participation in the Seabrook Station: 22% of total investment up for sale.
January, 1976	Ron Rieck occupies meteorological tower at site of Seabrook plant to draw publicity in opposition to the plant.

February, 1976	A coalition of environmental groups asks the NRC to conduct a full investigation into possible political tampering in Seabrook hearings; response to a statement by Governor Mildren Thompson who said he was given "assurance by a presidential aide almost a year ago that the Seabrook permit would be issued by September, 1975."
March 2, 1976	Referendum on ballot. Seabrook residents vote: yes - 632 no - 768.
April, 1976	Greenleaf Harvester's Guild organizes march to Seabrook to publicize opposition to plant.
April, 1976	Shipment of supplies for plant construction received at Portsmouth.
August 1, 1976	18 protestors arrested for trespassing at Seabrook site as part of a non-violent civil disobedient protest against the plant.
August 5, 1976	Formal groundbreaking for Seabrook Station.

APPENDIX B - ABBREVIATIONS USED IN THIS CASE STUDY

ACRS	Advisory Committee on Reactor Safeguards
AEC	Atomic Energy Commission
Audubon	Audubon Society of New Hampshire
ASLAB	Atomic Safety and Licensing Appeal Board
ASLB	Atomic Safety and Licensing Board
Corps	U.S. Army Corps of Engineers
DES	Draft Environmental Statement
EPA	Environmental Protection Agency
Forest Society	Society for the Protection of New Hampshire Forests
NECNP	New England Coalition on Nuclear Pollution
NRC	Nuclear Regulatory Commission
Public Service PSC	Public Service Company of New Hampshire
SAPL	Seacoast Anti-Pollution League
SEC	Site Evaluation Committee

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3. "An Act Relative to the Establishment of an Electric Power Plant and Major Transmission Siting and Construction Licensing Procedure," *New Hampshire Revised Standards Annotated*, chapter 162-F:9.

4. Audubon Society of New Hampshire and Society for Preservation of New Hampshire Forests, Brief filed with the New Hampshire Supreme Court as cited in *New Hampshire Audubon News*, v. 8, n. 2, October, 1973.

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BIOGRAPHY OF AUTHOR

James C. Spencer is presently a doctoral student in the Department of Civil Engineering at the Massachusetts Institute of Technology. He holds the degrees of B.S.C.E. and M.S.C.E., both from Purdue University. Prior to the commencement of graduate study at M.I.T., Mr. Spencer spent one and one-half years as a social worker in rural southeastern Kentucky. Although his background is in the traditional areas of civil and environmental engineering, Mr. Spencer's recent academic and research activities have broadened to include social and policy aspects, particularly as they relate to the environmental consequences of man's activities.

TEST AT SEARS ISLAND

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ABSTRACT

Test at Sears Island

A detailed history of the events within and without Maine in the years 1971 and 1972 which revolved around the attempt of promoter David Scoll to obtain permission to build Maine Clean Fuels oil refinery and terminal at Sears Island in Penobscot Bay, Maine.

The paper reviews the dynamics of this first test of Maine's first-in-the-nation Site Location Law, examines the extent and the nature of public participation in the hearing process as proscribed by the legislation, and reviews some of the logic and testimony which led Maine's Environmental Improvement Commission to vote (5-2) to turn down the Maine Clean Fuels application -- a decision which was later upheld by the Maine Supreme Court, thus altering the nature of industrial and energy development of the Maine coast for many years to come. (JNC)

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TEST AT SEARS ISLAND
PREPARED BY
JOHN N. COLE*

"Having Maine Clean Fuels argue a test case for oil in Maine is comparable to having Spiro Agnew argue the case for freedom of the press." (Maine Times editorial, August 20, 1971)

"The climate was right. From the governor through the legislature and on down to the members of the commission, everyone had the stomach for it. They were ready to stand up to whatever pressures the oil industry could apply." (Orlando Delogu, former member of the Maine Environmental Improvement Commission, the regulating agency which first tested Maine's Site Location Law at Searsport in the summer of 1971)

BACKGROUND

In the third week of July, 1971 -- almost a year to the day after promotor David Scoll and his company, Maine Clean Fuels (MCF) first surfaced in Maine -- the state's Environmental Improvement Commission voted 5-2 to turn down an MCF application for a license to build a 200,000-barrel-a-day oil refinery on Sears Island in Penobscot Bay.

It is true that David Scoll badly misjudged the temper of the times, the capabilities of Maine citizens, their agencies and their advocates. It is also true that he erred seriously when he allowed Maine's Depart-

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*Editor, Maine Times

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ment of Economic Development to persuade him that Sears Island would be a viable refinery location. It is a matter of record that Scoll came to Sears Island after similar refinery proposals of his were turned down by municipal agencies in Riverhead (N.Y.) and South Portland, Maine. And it has been concluded by many objective observers that David Scoll's presentation of his arguments for a refinery and his plans for its construction and financing were incomplete and [illegible] incompetent.

Supporting these truisms on the pro-oil side of the Sears Island case are the equally apparent characteristics of the anti-refinery forces in the summer of 1971. That was before the so-called "energy crisis" had added its anxious presence to the refinery equation; it was just after the so-called "environmental movement" had matured enough to become politically important. In addition, 1971 was the year many citizens of the Maine coast began to realize the positive qualities of their native habitat. For the first time since the Civil War, Maine residents began to see advantages in their remote and relatively simple lives. Instead of envying urban dwellers and suburbanites, Maine coast residents took a conscious satisfaction in their comparative security, freedom from crime, dirty air, crowded facilities, high taxes and other social negatives so frequently associated with life in the more populous regions of the northeast.

With their pride quite suddenly renewed in a place that they had so long taken for granted, Maine coast residents in 1971 were more determined than ever to protect the good thing they had just realized they had.

Given an inept promoter and an aroused citizenry, it might be assumed that David Scoll's Maine coast refinery could never have come to pass. That, however, is not the case -- not by a long shot.

Observers on both sides of the debate agree: If it had not been for the presence of Maine's then recently enacted Site Location Law (effective May 9, 1970) there would have been little that Maine and its citizens could have done to prevent the Maine Clean Fuels plan from materializing.

It was within the framework of the site law that the Scoll case was argued and a legal and binding conclusion reached. The law itself, then, becomes the pivotal background focus. Its presence set an orderly stage for a public drama that otherwise almost certainly would have become a series of detached and inconclusive vignettes played in a confused and ill-defined arena.

If the role of public participation in the Sears Island episode is to be productively understood and analyzed, then the debate's background must include some mention of the Maine social and political dynamics which produced the Site Selection Law -- a first-in-the-nation statute which gave a panel of Maine citizens the ability to decide in advance whether any proposed industrial development would have ". . . an adverse impact on the natural environment of its surroundings. . ."

The Site Location Law (see appendix) was written, passed and signed (by Maine Governor Kenneth M. Curtis) during the Special Session of the 104th Legislature early in 1970. Its appearance in bill form on the floor of the legislature was the result of bi-partisan (and often independent and uncoordinated) work by prominent Democrats and Republicans.

The politicians, bureaucrats and "brain-trusters" in Augusta were motivated by the wave of concern which swept the Maine coast when its newly aware citizens realized that even though they liked their quiet habitat better than most other places, there was little they could do legally to keep it that way. Two oil refinery proposals for Machias and Machiasport and a gargantuan scheme for a combination nuclear power plant and aluminum refinery at Trenton (Pop. 378) were the largest and most surprising of the developmental stones thrown into Maine's quiet pool during 1968, '69 and '70. Coming as they did in concert with the national environmental awakening, the proposals made waves that reached from one end of Maine to the other.

Nearly every participatory organization in the state, from the League of Women Voters to the Maine Lobstermen's Association, indicated to Governor Curtis and members of both parties in the legislature that they would favor some law which would give some state agency reasonable controls over large industrial developments, especially new ones brought over the border "from away."

Details of the citizen-based process which pressed such innovative legal offspring from the generally stubborn belly of the Maine legislature are difficult to record and analyze. A Republican gubernatorial contender, Harrison Richardson -- then House majority leader -- sheperded the bill through both House and Senate; but the bill he got was conceived in its essentials by F. Andrews Nixon, then an administrative assistant to Governor Curtis -- a Democrat who, in turn, worked closely and cooperatively with Richardson.

Passed by a large margin in the final days of the 104th, the bill became law just a few months before David Scoll (then of Fuel Desulphurization, Inc.) showed up in South Portland early in July of 1970 with a proposal which would give that city an oil refinery.

David Scoll's journey to the Maine coast began in Washington, D. C., in 1967 with the passage of the national Clean Air Act which set minimums on the amount of sulphur that could be present in the fuels burned by urban utilities.

A New York attorney (Scoll and Coleman) with a background in government service (Maritime Commission, Reconstruction Finance Corp.), David Scoll saw entrepreneurial possibilities in the news that the Clean Air Act would require New York's Consolidated Edison Co. to use large amounts of low-sulphur fuel. Using his Washington experience, Scoll was one of three persons to receive oil import allocation grants (conditioned upon low-sulphur fuel production) from then Secretary of the Interior Stewart Udall in the final two weeks of the Johnson Administration.

With those "tickets" and a newly formed company named Fuel Desulphurization, Inc. (FDI), Scoll went first to Riverhead, Long Island, N. Y., with his refinery plans. Prodded by an ad hoc citizens protest group called "It Stinks", the Riverhead Planning Board voted 3-0 against a rezoning move which would have made way for the refinery.

Drawn to Maine by news of its compliant reception of low-wage, high-pollution industries, its deep water ports, and the news that Atlantic-Richfield had options on potential refinery sites at Machiasport, David Scoll brought his plans and his import tickets to South Portland. Under the new name of Maine Clean Fuels, Inc. (MCF), he proposed to build a $130-$150 million desulphurization plant and refinery that would import 100,000 barrels of high-sulphur crude oil daily to convert into low-sulphur fuel. He proposed to do this in a city whose main industries to date were light manufacturing, such businesses as the Maine Mall, and oil storage for the Portland-Montreal pipeline. But he soon discovered that South Portland wanted the refinery no more than had Riverhead. Leading the opposition was the Save Our Environment Committee, organized in June, 1970, when the first rumors about the refinery surfaced. This group objected to the proposal on the grounds that (1) such a plant "should be located away from a population center because of the health hazards of sulfur fumes" (Maine Times 7/24/70) and (2) further development of South Portland should be "suitable to what is essentially a residential community. . ." (Maine Times 7/24/70) In two weeks it collected the signatures of 2,000 South Portland registered voters on a petition seeking an ordinance amendment to prohibit pollution-producing heavy industry in the city. This peition was the first in a chain of events which eventually closed MCF out of South Portland.

First, 300 residents turned a city council meeting on Monday, July 21, into a mini-public hearing on the proposal. At that meeting the council voted to send a copy of the petition to the planning board with a request for a public hearing on the matter. Then Citizens Who Care (CWC), an organization dedicated to saving Casco Bay from oil development and the intrusion of heavy industry, announced its support of the Save Our Environment Committee, and surplus "It Stinks" buttons found their way from Riverhead shirt collars to South Portland lapels. A great deal of effort was expended to educate the public both pro and con the project. During the week of August 11, Scoll and his chief engineer, Martin Barry, held a press conference to offer plans (that lacked technical detail) and assurances (that did lay to rest some harmful rumors). And "in a move unprecedented in Environmental Improvement Commission (EIC) decisions" (Maine Times 8/14/70), the Council of Governments of Portland area communities became a clearinghouse to disseminate pro and con information on the proposal, including specifics sent into the EIC, to all Portland area communities.

During the week of September 22, this education paid off for the opponents: In a surprise move the city council voted 5-2 to oppose location of the MCF plant in the city because of pollution hazards and 5-0 to notify the EIC that the city could not approve the plant because it violated its fire zone ordinance. As the EIC cannot force a community to accept a project violating its laws, that second vote effectively killed the proposal, according to Dr. Donaldson Koons, chairman of the EIC. (Maine Times 9/25/70)

"Several hundred citizens crowded the South Portland meeting room for the Council's decision on the proposed plant that represented new jobs and a tax bonanza as well as a pollution threat. The applause that followed the decision showed that for those hundreds of South Portlanders, at least, environment was more important than the monetary benefits." (Maine Times 9/25/70)

So, rebuffed by South Portland, Maine Clean Fuels turned to Searsport, the only other location suggested to Scoll by Department of Economic Development (DED) Commissioner James K. Keefe. It was there, in a small high school auditorium in one of Maine's oldest seacoast communities, that the Site Selection Law was to get its first and most important test.

ANALYSIS

As Governor Kenneth Curtis put it in his message to the EIC:

"This hearing will be the first clear cut test of Maine's ability to analyze and regulate heavy industry under the Site Approval Law. The task before the Environmental Improvement Commission is to reconcile the incalculable recreational and fishery value of Searsport and the Penobscot Bay area with the undeniable economic and energy benefits which the Maine Clean

Fuels application offers to Maine and New England. If such a reconciliation is not possible at this time, the application must be rejected, for the premise of the Site Approval Law is that Maine will not sacrifice present jobs or quality of life for future development. Most American industry, including the oil industry, has taken significant steps toward environmental self control in the last decade, but to locate on Penobscot Bay an oil company will have to show that it is capable of matching or exceeding the very best environmental efforts which have been made elsewhere.

"Many people have overlooked the significance of the fact that this hearing is being held at all. Maine was the first state in the nation to provide a state-level approval process for major industries, and we are still one of a handful of states which have such a process. In short, we have rejected claims on the one hand that any industry is so hopelessly dangerous that we should ban it outright forever and on the other hand that all industry is automatically beneficial and should be granted whatever sacrifices it demands of us.

"This hearing is the first step in a case by case process through which Maine will make clear the terms on which our future industrial development will take place. This case by case method is not so heroic, not so grandiose, not so totalitarian, as the extremists on either side would like, but it is more impartial, more thorough, and more fair. It reflects the goal for the settling of difficult questions, even in times of strong and sincere feeling, that is set forth in the Constitution of the United States and the State of

Maine, namely due process of law and the realization that the way in which a decision is made is frequently as important a safeguard of our way of life as the decision itself.

"I have received more than a thousand letters urging me to take a position, to exert a so-called moral leadership with regard to this application. I feel that the time for moral leadership was in the preparation, support, and passage of the Site Approval Law and in pledging, as I do again now, to veto any effort to weaken it . . .

"We are not talking now about the abstract aspects of poverty or pollution. Discussion, letters, petitions, and speeches which assert that the one evil is worse than the other are exercises which have no place in the specific case before the EIC. Maine government has decreed that the Commission must find that there will be "no adverse effect on existing uses." Those who would make this hearing a popularity contest should think carefully about whether a series of public relations contests involving America's most powerful industry offers Maine a better guarantee of environmental integrity than this strict standard applied fairly.

"I think not, and in rejecting mere popularity as a yardstick for judging this application, I am defending Maine's legal process with the same determination with which I expect this Commission to safeguard the Maine environment."

THE ORGANIZATIONS

The Opposition

Who were the actors in this drama? "Using a mix of logic, intelligence, dry Yankee wit, and elemental decency, the people of Maine have been standing up over the past four weeks in an effort to turn aside the threat of a proposed oil refinery on Sears Island at the head of Penobscot Bay." (Maine Times 4/16/71) They came singly and as groups.

Singly, they mailed more than 1,200 letters to the governor's office, running 100 to 1 against the refinery. In the letter-writing campaign, Mainers were joined by summer residents: "More than half the letters came from outside of Maine" (Bradford, 305), many from prominent people. Two letters provide a sample:

> Oklahoma City -- Please don't take the chance of ruining Penobscot Bay with an oil refinery near Searsport. My father's family, the Thurlows, helped settle the Deer Isle area, and I hope that my children can enjoy the beauty their ancestors passed to them.
>
> Besides, you can always get oil from Oklahoma -- but Oklahoma has no way of providing a beautiful rugged coastline.

> Gorham, Maine -- My home, 8 rooms, very little insulation heats for $300 a year. I can't imagine additional oil activity lowering the price of oil more than 20%. This I'll gladly pay to keep our coast as free as possible from oil. I have an

> idea most of our residents feel
> the same way.
>
> (Bradford, 306)

Probably this particular outpouring of public opinion did little, if any, good. As Governor Curtis stated, it was far better to have the EIC rule on the proposal than to have it "decided as a political popularity contest," for if MCF's refinery hinged on his approval, "you would have no right to appeal from the actions of a subsequent Governor who took the opposite course. . ." (Bradford, 310)

A host of other groups joined the Save Our Environment Committee and Citizens Who Care, two of those that had taken on MCF in South Portland. The Coastal Resources Action Committee (CRAC), headed by Russell Brace and Horace Hildreth, Jr., led the opposition, acting as a coordinating agency for other groups against oil. Under its umbrella crowded the Natural Resources Council, CWC, Pollutorsport of Searsport, Maine Coast Heritage Trust, the Maine Lobstermen's Association, and the Stonington-Deer Isle Committee Against Oil. CRAC had gained prominence helping to keep King Resources from building an oil terminal on Long Island in Casco Bay. Although the end of that battle found it broke, within days of Scoll's announcement of intentions, the committee received a $40,000 war chest, a large part of it in small donations from residents of Maine's mid-coast region. It used these contributions to hire two attorneys to prepare the case against oil. And working from headquarters in Belfast opened during late February, prepare an extensive case they did. Using a number of technically knowledgeable witnesses,

> "they established that some refineries stink, some tankers spill, and most spills kill. Much of their case rested on a form of guilt by association, but the Penobscot Bay mystique and Maine Clean Fuels' lack of either expertise or a track record of its own made it effective. For variety, CRAC witnesses also alleged that the fresh-water requirements of the refinery exceeded the known available supply and that Maine Clean Fuels' refinery diagram showed a facility that would have overhung Sears Island by 100 feet to the south."
>
> (Bradford, 316-17)

CRAC was also responsible for obtaining a ruling from Ralph W. Snyder, Jr., acting administrator of the Oil Import Administration, U. S. Department of the Interior, that Scoll's "ticket" to import crude oil might be virtually worthless. Another CRAC plan that met with success was that of getting Penobscot Bay communities to vote on MCF's proposal in annual town meetings: Almost all voted unanimously against oil. After the final EIC hearing CRAC planned to "turn its energies and resources toward long-term planning for the region." (Maine Times 3/19/71)

Two of the more active organizations under CRAC's umbrella were Pollutorsport of Searsport and the Maine Lobstermen's Association. Pollutorsport, a group from the Searsport area, was responsible for organizing a meeting in late February to oppose the refinery -- "one meeting Keefe (commissioner of DED) will not attend." (Maine Times 2/26/71) It also gathered more than 20,000 names on a no-oil petition to present at the EIC hearings. The Maine Lobstermen's Association had a vocal spokesman in its president, Ossie Beal. At one meeting in Belfast (March 1, 1971), about fifty people walked out with him when he was threatened with eviction because of his line of questioning. At another meeting on Deer Island (January 26, 1971), he said "he thought the oil company . . . was looking for a place where people would be stupid enough to accept it." (Maine Times 1/29/71) At the hearings themselves, Beal offered concrete testimony:

> There are 6,285 people employed in the fishing industry in Knox, Waldo and Hancock counties, with 4,985 licensed fishermen, clam and marine worm diggers, and 1,300 employed in onshore processing of fish products.
>
> He worries because "oil spills are a sure thing where refineries and tankers are involved."
>
> "With the present value of one lobster trap running about $15, and with the average number of traps per fisherman running about 150, the average investment per man for traps would be $2,250," Beal said. He added that one Stonington fisherman lost more than $180 in one day when a tug and barge cut off six pairs of his traps in one trip.
>
> Beal said the total number

> of lobster traps in the area is about 186,000, representing an approximate investment of $2.2 million, and he and other lobstermen feel that tankers and barges would be cutting trap lines and toggles right and left because of bad weather and fog in the area.
>
> He also mentioned the 10 to 20 ferry crossings from Rockland to Vinalhaven and North Haven, and the eight to 18 ferry trips from Lincolnville to Islesboro further congest traffic in the bay.
>
> "We who have spent our lives on this coast and are familiar with its strong tides, its heavy fog, its rocky shoals and severe storms, believe it to be one of the riskiest places to handle oil" . . .
>
> (Maine Times 4/9/71)

But perhaps one of the most eloquent statements of the lobstermen's case was made by Eugene Eaton, a Little Deer Isle lobsterman, scalloper, and clam digger. He said:

> "The life of a fisherman is not an easy one. He has to make his livelihood in all kinds of weather -- winter and summer -- subject to price change in the market values and subject to the migratory nature of the species which he is after.
>
> "However, these several thousand fishermen have accepted the challenge and have willingly worked hours that would be repugnant to the average layman. He

> has an investment which runs from a few hundred dollars to quite a few thousand dollars. He doesn't always have the best house, the best car, or a pocket full of money. But there is one thing which he does have that is sadly remiss in some segments of our society today.
>
> "He has pride, and an inborn desire to conserve and protect the environment in which he lives, and it is this pride and the love of home which he will pass on to his sons and the generations to come.
>
> "As we view our society today with the ever increasing mania for industrialization and the associated evils that go with it that keeps creeping up our coast like a disease, we are ever reminded that Maine is indeed the last frontier. We, as fishermen, realize the joys and rewards of free enterprise, but we do not wish to be disenfranchised because of the apathy or complacent acceptance of what we believe to be the potential destruction of our environment and livelihood.
>
> "Ladies and gentlemen of this commission -- you are our last defense."

(Maine Times 4/16/71)

Two other groups were formed in response to the oil threat. DESTINY, headquartered in Camden, "said this week (3/12/71) in its first statement that Maine politicians should exert more effort to keep oil out;

otherwise they will be defeated' . . . as quickly as they come up for re-election.'" (*Maine Times* 3/12/71) No Sir' (No Sears Island Refinery) conducted a letter-writing campaign prior to the EIC hearings.

Several already well-established groups also came out against the refinery. The Maine chapter of the Sierra Club "unanimously voiced its opposition to 'any operation which increases the possibility of oil spills near the Maine Coast.'" (*Maine Times* 2/19/71) And during the hearings

> John Lewis, of the New England Chapter of the Sierra Club, pointed out that there has been a 500 percent increase in oil spills in the past five years, and that even though the bigger spills get all the headlines, scientists say "the smaller day-to-day spills in coastal waters and harbors of the world produce chronic pollution that is much larger in total volume and probably more severe in biological consequences."
>
> He lists dozens of international and New England spills since 1968, and notes that most of them occur within 10 miles of shore.
>
> (*Maine Times* 4/9/71)

The East Penobscot Resort Association went so far as to hold a special meeting in early March to go on record as opposing the refinery. The Allagash Group (TAG), formed in 1970 by John Cole to "focus Maine's intellectual resources of Maine development problems

. . . retained three graduate students in the Kennedy School's Public Policy Program to evaluate the refinery. Their report . . . concluded that the refinery would result in a net loss of $948,000 in wages to residents of the Penobscot Bay area and that 'the most attractive employment development strategy available to the state is a program to increase poultry production and to establish production of modular housing.'" (Bradford, 314)

These, then, were the groups that citizens formed to oppose Scoll's refinery. Many of them had witnesses testifying at the hearings. What of the two attorneys who prepared their case?

> The bulk of the opposition to MCF was marshalled and stage-managed by Harold C. Pachios and Theodore Kurtz, Portland attorneys for the Coastal Resources Action Committee (CRAC), and their group of technical witnesses.
>
> (Maine Times 4/16/71)

"Superficially, Scoll and Pachios were well-matched antagonists, for Pachios's stocky build and politically intuitive manner made him at times appear a twenty-five-year-younger version of his opponent. Ironically, among the many respects in which they differed was that Scoll had been a salmon and trout fisherman for most of his life, while Pachios, fresh from ten years in Washington, was just taking up tennis and sailing in his first real participation in outdoor recreation since leaving Maine. (Bradford, 314-315)

THE PROPONENTS

Against whom were the opponents of MCF arrayed? Who supported the idea of a refinery on Penobscot Bay? Obviously there was Scoll himself, who for all intents and purposes was Maine Clean Fuels. He had "one major problem, however. Because David Scoll has never built, operated or engineered the operation of a deep-water oil refinery, he can not answer questions about how it will be done. He is a promoter, not an oil man; his firm is playing petroleum poker instead of probing petroleum problems." (Maine Times 4/2/71)

The other three members of the board of FDI, who with Scoll put up the initial capital, were described as follows:

> Chairman of the board is J. Howard Marshall, attorney, whose corporation connections include Ashland Oil and Refining Co., Standard Oil of California, Union Texas Natural Gas Corp., and Allied Chemical Corp. He is a former member of the Petroleum Administration Board of the U. S. Interior Department, former special assistant to the U. S. Attorney General, chief counsel of the Petroleum Administration during World War II and member of the Military Petroleum Advisory Board to the Joint Chiefs of Staff from 1944-50.
>
> The other two directors are Warren Lee Pierson, a corporate executive, and Carl Howard Pforzheimer, Jr., investment banker.
>
> (Maine Times 8/14/70)

Encouraging them throughout the course was the Maine Department of Economic Development (DED) and especially its commissioner, James K. Keefe. DED seemed to feel that

> . . . its mission was to bring jobs and prosperity to Maine and that it should be judged in those terms. Commissioner James Keefe was sincerely proud that he had adopted a theme of "Development Through Conservation" and resentful that no one remembered the very substantial role that Andy Nixon, his special assistant, had played in the creation of the site and oil-handling laws. Because the site law vested a veto power in the Environmental Improvement Commission, DED felt more strongly than ever that its departmental mission was promotional rather than selective. The Environmental Improvement Commission was the agency assigned to guard against mistakes.
>
> These priorities led DED to regard its environmentalist detractors as an elite and selfish threat. Since the critics were no less convinced of the sacredness of their own priorities, they tended to dimiss the development personnel as political hacks and industrial lackeys.
>
> (Bradford, 301)

One prime example of how Keefe was viewed by his opponents is the following editorial:

> James K. Keefe, Maine's Commissioner of Economic Development, (DED) looms as a large example of why so many people are so upset

> with their own governmental institutions. Having spent two hours last Friday in Camden listening carefully to James Keefe talk with more than 400 representatives of the Maine "public" we came away convinced the man is incompetent, insensitive and undeserving of the apparently blind support he is getting from Governor Kenneth Curtis.
>
> Keefe is also arrogant, overpaid (one of the highest salaries of any Augusta bureaucrat) and dangerous, in the sense that his vision of economic development for Maine is the very sort of enterprise which can destroy the state's most valuable assets.
>
> His explanation of why the DED continues to actively support the proposal to build an oil refinery on Sears Island is an explanation without honesty, logic or personal courage. As Keefe explains it, his department is pushing oil for Penobscot Bay only because he is required to do so by state statues. Asked plaintively by a woman if there is anything -- anything at all -- the people of the Bay area can do to persuade Keefe that they don't want oil, his response was: "Nothing you can do makes any difference to me."
>
> (Maine Times 2/19/71)

Keefe did have one powerful defender:

> In defense of his embattled Department of Economic Development (DED), the Governor said the DED is doing no more than the job it is told to do by the laws of the state. "They (the DED) are presently in a position analagous to that of a lawyer with an unpopular client," the Governor explained. "Their function under law is not to judge him, but to help him present his case. . ."
>
> (Maine Times 2/12/71)

The following statement, made by Keefe in a news release, seems, however, to be more than merely the expression of a lawyer presenting a case:

> "People who use political environmental concern argue against capital intensive industry (oil) . . . As long as they have its advantages, they don't care about the others . . . They advocate making a museum out of the state . . . Their view of Maine's future is a state where most of our people would be economic second-class citizens serving as huers (sic) of wood and drawers of water . . . ."
>
> (Maine Times 2/12/71)

Also in favor of the proposal were the Bangor & Aroostook Railroad, the Committee for Full Use of Our Resources (FOR), the Maine Community Betterment group, Delta Chemicals, the Maine State Federated Labor Council, Great Northern Paper Co., and "an independent Boston fuel dealer who finally admitted that he probably wouldn't be buying any of MCF's products anyway." (Maine Times 4/9/71) The Bangor & Aroostook Railroad, as owners through a subsidiary of Sears Island, had an obvious financial stake in the proposal:

> Bangor & Aroostook Railroad Co., prime owners of Sears Island, issued a statement to its employees which said the company was in precarious financial condition and would make from $4 to $6 million in gross annual revenues if the oil refinery were built. The company letter went on to urge employees to write their legislators and ETC chairman Donaldson Koons saying that the oil refinery "is vital to our economic health. . ."
>
> (Maine Times 3/19/71)

FOR, a Searsport-based group that billed itself as made up of "fair appraisers," turned out to be

> three officers of the Bangor & Aroostook Railroad Co. (see above); the leader of the pro-oil faction in Searsport; a Penobscot Bay tugboat operator . . . a labor leader; a retired oil tanker captain now involved with the promotion of a system to contain oil spills; and two Searsport businessmen who are promoting the oil project.
>
> (Maine Times 3/19/71)

Maine Community Betterment groups are organized by the

DED.

However, these visible proponents were, with few exceptions, small fry compared to the invisible power behind MCF. According to a Maine Times editorial (2/19/71):

> "The company, and its president -- David Scoll -- are merely the visible tip of the petroleum iceberg that is now leaning its ponderous weight against the Maine coast. Maine Clean Fuels is a subsidiary of Fuel Desulphurization, Inc., which in turn is financed largely by the Ashland Oil Co., whose immediate past president is a member of the board of directors of Fuel Desulphurization (according to Dept. of Economic Development statements). But beyond and behind Ashland are several other major oil firms who have applied their financial and political muscle to the Sears Island proposal. They are making this move because they know that if the Sears Island refinery comes to pass, it will be the opening wedge that will make Maine's deep water ports available to many other oil companies. They desperately need terminals on water deep enough for their supertankers, which can't get close to shore unless they have navigable depths of at least 60 feet."

The Commission

If the opponents and proponents of the refinery were the actors, the Maine Environmental Improvement Commission was the group of critics in the audience. It was up to these eight citizens to test a new law. It was up to these eight people to determine on the basis of that new law the future of one of the most beautiful bays on a beautiful coastline.

The EIC was established to "exercise the police power of the State to control the location of those developments substantially affecting local environment in order to insure that such developments will be located in a manner which will have a minimal adverse impact on the natural environment of their surroundings." The rest of the Site Location Act (see appendix) from which the above quotation comes details the methods by which the commission is to carry out this mandate and the criteria to be used. On the commission at the time were Llewellyn Colomy, Norman T. Gleason, Merle F. Goff, Evelyn Jephson, Dr. Donaldson Koons (chairman), Edgar W. Thomas, Charles Wyman, and Orlando Delogu.

These are the individuals, then, who sat through more than 60 hours of testimony, sometimes acting as "patient referees and gentle interrogators" (Maine Times 4/2/71) and other times using questions as scalpels to cut through inconclusive ramblings. These are the citizen appointees who had only 45 days to pour through 1,664 pages of transcript and 316 exhibits -- and this after having had to read the more than 1,000 pages of the MCF application. (Maine Times 7/30/71) In the end the EIC "turned down MCF because it was the wrong applicant with the wrong application in the wrong place. But the commission made clear that its decision didn't 'in any way limit further consideration of similar oil-related development in Maine.'" (Maine Times 7/30/71) What were the events that lead to this decision?

HAPPENINGS

The drama began in early January when Scoll suggested in a letter to Richard Kilroy, president of the Maine Port Authority, that MCF and the MPA combine to build the "largest deep-water oil refinery and terminal on the east coast" on Sears Island. (Maine Times 1/8/71) Within the next two months, while Commissioner Keefe kept touting the proposal (and Governor Curtis kept backing the commissioner), the public deluged the governor with anti-oil letters, and the legislature responded with a resolution, sponsored by Senate President Kenneth MacLeod and Senator Joseph Sewall, placing a moratorium on all oil development along the coast until a decision could be reached in litigation in progress testing Maine's oil conveyance law. "That law . . . (passed a year earlier) established standards for oil conveyance and imposed a levy on each barrel of oil landed in Maine, the proceeds to be used for a clean-up and liability fund in case of oil spills. The law was challenged immediately by ten of the nation's largest oil firms, and the case is expected to reach the U. S. Supreme Court." (Maine Times 2/5/71) When Keefe responded by calling the resolution a "hoax" (Maine Times 2/19/71), Senate Majority Leader Richard N. Berry introduced a measure to the legislature to turn the resolution into a bill.

In the meantime, Scoll had officially submitted his application for permission to build the refinery to the EIC (February 9, 1971). His application opened: "The purpose of this project is to implement the Federal Clean Air Act of 1967, as amended, by making available to consumers of fuel oil in Maine, and elsewhere in New England, a large volume of low sulphur oil." (Bradford, 304) An aroused citizenry responded with a spate of public meetings, even turning already scheduled annual town meetings into referenda on the oil question. Even before the official entry of the EIC into the foray, anti-oil residents of Deer Island called a special public meeting (January 26, 1971) to discuss the question, "Why Oil?"

> At the end of a standing room-only meeting at the Deer Island elementary school on a stormy Tuesday evening, Richard Buxton, chairman of the Stonington planning board, asked for a show of opinion on the plan to build an oil refinery on Sears Island in Penobscot Bay.
>
> Of the 250-plus persons in the room, only one voted in favor of oil. It was James Keefe, commissioner of the Maine Dept. of Economic Development (DED). But, according to one observer, the unanimous vote against an oil refinery made little or no impression on Keefe. "He didn't seem to give a damn about what the people had said," reported the observer. . .
>
> "Among the people who spoke against the oil refinery on Tuesday were John Good, superintendent of Acadia National Park; Ossie Beal, president of the Maine Lob-

> sterman's Association. . .; Emily Muir, architect, planner and member of the Stonington planning board; she asked for immediate legislation prohibiting the construction of new oil refineries on the Maine coast.
>
> . . .The meeting progressed through a series of impassioned pleas from fishermen, citizens and officials from Deer Isle, Stonington, Bucksport, Islesboro, Orland, Vinalhaven and other Penobscot communities. . ."

(Maine Times 1/29/71)

The next public meeting convened at the Opera House in Camden on February 12, although Scoll had held secret meetings in the interim with Searsport selectmen and Augusta legislators. It was arranged by Mrs. Cary Bok, chairman of the Maine Community Betterment Council, and the Rockport, Camden, Lincolnville Chamber of Commerce. "Commissioner Keefe made the . . . DED case for oil . . . before a crowd of some 400 persons from the Penobscot Bay area. A straw vote on the question, oil or no oil, followed a pattern set at a previous meeting at Stonington. Most of the 400 persons at Camden raised their hands against oil; Keefe and one other man were the only supporters . . . Keefe said the refinery on Sears Island is needed to provide jobs. He did not discuss the refinery's environmental risks, nor the risks of oil spills due to increased tanker traffic, nor the effects on the bay area economy of an oil spill, which would end the bay's productivity for the estimated 1,300 fishermen whose livelihood it now provides.

In answer to a woman's question, "Mr. Keefe, is

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there anything at all we can do; any petition, any referendum, any action we could take collectively, that would convince you the people of this area do not want oil? Is there any way we can persuade you to change your position?" James Keefe replied, "Nothing you can do makes any difference to me." (Maine Times 2/19/71)

The next day Senator Edmund S. Muskie announced, "I now oppose the Sears Island oil refinery proposal." (Maine Times 2/19/71)

The meeting that attracted perhaps the most media attention besides the EIC hearings themselves -- CBS-TV, Life and Fortune joined the many Maine and New England news people in attendance -- was held at the Searsport Memorial Gym on February 18.

> From the beginnings of its organization, the meeting was confused in character and purpose. When it ended, conditions had not changed. The meeting was first mentioned publicly by Robert Osborne, Searsport real estate man. According to early press reports, Osborne wanted to organize an informational meeting to discuss the proposed oil refinery on Sears Island in Penobscot Bay. Although Osborne never denied his role as chief organizer and arbiter of the meeting, he also said the gathering was sponsored by the Maine Community Betterment group in Searsport. . .
>
> There were . . . about 800 residents of Searsport and its neighboring communities on hand for the session in the Searsport High School Memorial Gym last Thursday evening (Feb. 18). This did not mesh with previous statements by Osborne that the meetings would be open to Searsport residents only.

Indeed, Osborne himself told a CBS television news team, headed by correspondent Robert Shackne, that he, Osborne, had gone to some lengths to see that only those persons in favor of the oil refinery plan would be admitted. He told the CBS man, "We wanted a meeting that would give you our side of the issue."

Osborne also went to some lengths to promote the meeting for CBS-TV. When contacted in New York, CBS assignment editors were told the Searsport meeting would be an "official meeting," a "public hearing." It was not until CBS people began checking that Osborne redefined the meeting's complexion. (CBS, by the way, did send a full team to Searsport, but not to film the proceedings "live" as Osborne had said they would in his announcement letter. Results of the Shackne effort have been seen by Maine viewers who were awake for the CBS News at 7 a.m. Monday. The crew filmed throughout and after the meeting, and their bright lights dazzled the principals and speakers from the floor.)

In addition to his inconsistent statements to CBS, Osborne also left much room for confusion in his communication with press and public. In a memo to newsmen, he indicated he would make the decisions about which newsmen could and could not attend the meeting. When questioned about his right to discriminate about which reporters could attend a supposedly public hearing, Osborne said he would not deny entrance to any qualified reporter, although Osborne retained the right, he said, to decide "qualifications".

As it turned out, like so many other details of the confused session, nothing Osborne said made any difference. There were two middleaged women seated outside the hall door, a bit like chaperones for a school dance. They pushed their pencils down the names on the list and said, "Sorry, your name doesn't seem to be here," when an uninvited reporter turned up. But no move was made to stop the man when he entered the hall and took a seat at the press table up front.

Other non-Searsport residents gained entrance via registered letters which they had been sent by Osborne. But these personal passports also proved to be unnecessary. As 7:30 approached, about 100 uninvited guests, who had formed a sort of counter-meeting outside the gym entrance where they caught the immediate attention of the CBS cameras, were not denied permission to enter. They came in carrying their anti-oil posters, a mixed group of age and occupational types, almost all of them from other bay communities which would be affected by the oil refinery.

The good manners of the visitors had evidently not been predicted by Osborne, who had at least six Searsport police officers and an equal number of Waldo County deputies on hand, in case attempts might be made, as Osborne put it, "to disrupt the session". Osborne (not a town official) would not answer questions about who paid the police to perform the private function of protecting his meeting . . .

The aura of tension created by the considerable number of gun-toting police had been increased earlier when one newsman asked Osborne for entrance rights and was told by Osborne not to cause any trouble, because in addition to the police there would be Portland longshoremen on hand, brought in (by Osborne?) "to take care of trouble makers." This information, in turn, prompted others to call on the State Police for the protection of citizen rights. The troopers were not on the meeting floor, but were "standing by at an unrevealed location. . .," according to the **Bangor Daily News.**

With all this in the background, Osborne's obvious nervousness at the start of the meeting was understandable; so too was the visible anxiousness of his featured speaker, David Scoll, president of Maine Clean Fuels, the firm that says it wants to build the $150-million oil refinery. Making his first appearance before the Maine public in connection with the Sears Island refinery, Scoll was flanked by five associates. They sat at a long table set across the front of the large gym where they looked out at a quiet but uneasy audience.

The unease was not dispelled by moderator John H. Fallon who, making a speech, said no speeches could be made; said any questions pertaining to the oil refinery could be asked, but would not necessarily be answered; and said no rebuttal could be made from the floor to any statements made by Scoll or his advisors.

What had originally been announced as a public meeting, and then became a private, pro-oil gathering for the TV cameras, and then became a Searsport adult-residents-only meeting, finally became an open-to-all-on-hand (including out-of-town students) session with the police in force and the rules laid down by the meeting speakers.

Given this background, more confusion was to be expected, and the first speaker, David Scoll, led the way. The way he chose was along a path of inconsistency and self-contradiction that lasted throughout the next two hours in answer to more than two-score questions asked by a score of speakers who came to the floor microphone at the direction (and personal choice) of moderator Fallon. For some observers, Scoll's inconsistency was the only consistent of the evening.

Some examples: . . .

-- Asked what effect the refinery would have on oil vessel traffic in the bay, Scoll said, "It (the refinery) will actually reduce vessel traffic. In 1969, there were 89 oil carrying vessels making trips up the bay. We plan to bring in just one tanker every ten days or so, and that's less than 89 a year . . ." Scoll did not make clear why his tankers would eliminate the need for the 89 vessels which are serving other area demands for fuel oil; nor did he explain the wide gap between his statement and his firm's statement in its application now on file with the state Environmental Improvement Commission. According to the application, at least "four barges a day" will be traveling the bay every day. Unmanned, pushed by tugs, the barges will be some 300 feet long and will carry 80,000 barrels of petroleum products. This amounts to more than 1500 oil vessels -- longer and larger than most of the 89 recorded in '69 -- that the refinery will bring to the bay, according to Maine Clean Fuels' own application. Scoll never explained the apparent discrepancy.

--In his introductory remarks, Scoll said it was thanks "to the genius of Senator Edmund Muskie" that the Clean Air Act had created a demand for the low-sulphur oil products the refinery would produce. Asked later if he would explain his estimate of the Muskie genius in relation to the Senator's announced opposition to the oil refinery, Scoll said, "No, I will not."

--Asked a question on the general topic of oil spills, Scoll replied snappishly, "You shouldn't worry so about oil spills. We are going to be right here, in this community, right on the job." Later, in answer to a question about the connection between Maine Clean Fuels and the Ashland Oil Company, Scoll replied, "We have a handshake agreement with Ashland that they will run the refinery once it is built. We don't much want to stay around to run refineries". . .

--Asked what assurance there is that Maine Clean Fuels would assume liability for spills, and why such assurance had not been included in the application, Scoll replied, "We didn't have to put it in. We are required by law to assume liability." Scoll did not mention that the "law" to which he referred is Maine's coastal conveyance law, currently being challenged in the courts by 10 major oil companies who are expected to take it all the way to the Supreme Court in an effort to get the liability provision struck down. Meanwhile, the law is not in effect.

--Asked if any studies had been made of the effects of oil spills on marine organisms, a Scoll associate said, "No," apparently overlooking the report of a year-long study of an oil spill in West Falmouth (Mass.) in 1969. Filed at the Muskie hearings last October in Machias, the report was read there by its leading author, Dr. Max Blumer of the Woods Hole Oceanographic Institute. Among other details, the report points out that oil spill damage to marine life is long-term and severe. Dr. Blumer says further that the study shows there is no way of preventing such damage because the technology for rapid oil spill clean-up "does not exist."

--Asked by Leroy Stoddard, Jr., of Bucksport: "Is technology infallible?" Scoll refused to answer, although in his introductory remarks had said, "All you boys and girls who are worried will get your chance to ask about tankers." When Stoddard rephrased his question to ask "What can you do if a tanker goes aground and starts spilling oil all over the Maine coast?" Scoll turned away from his microphone, nodded to moderator Fallon who, in turn, nodded to a police sergeant who sent two deputies down to remove young Stoddard from his place at the question microphone. It was probably the first time in Maine history its police had taken action against a citizen for asking a question at a meeting called specifically to answer citizen questions. . .

--Asked if the refinery itself would be non-polluting, Scoll said, "Yes, it will be the cleanest refinery in the world." Later, he said he had no refinery experience, and that no refinery like the one his firm plans has ever been built anywhere.

It was nearing 11 p.m. and about a third of the audience had already left, some looking a bit confused, when moderator Fallon said: "Some of the newspapers want us to end this so they can make their headlines or not, but I think we've kept Mr. Scoll here about long enough; although we're all willing to hang on as long as you are."

Shortly thereafter, the rest of the audience filed out. The police left, taking down the roadblocks which had cordoned off the school. David Scoll and his associates shuffled their papers, stuffed briefcases and headed out into a light snowfall. As they did, one man approached Scoll, shook his hand and said, "I want to congratulate you for what you have just done to help everyone who wants to keep oil off the Maine coast. I never expected such a wonderfully inept and clumsy performance."

(Maine Times 2/26/71)

During the next few weeks, two more meetings were called specifically to discuss the oil question. The first, sponsored by Pollutorsport of Searsport, was set for February 26 at Searsport House. The second, called by the Penobscot Bay Flotilla and the Belfast City Council, was held March 1 at the Belfast Area High School. Although Keefe was invited to speak, economist Dr. Edgar Miller spoke in his place, talking for 45 minutes about Maine's economy and mentioning Sears Island only once during a meeting supposedly called as an informational meeting on the refinery plan. It was at this meeting that Ossie Beal was threatened with eviction for asking too many questions.

A fortnight after the Belfast meeting a public hearing was held on Senator Berry's bill legislating a moratorium on oil development.

> One of the highlights of the legislative hearing was the display of a marine chart by Capt. George Jennings, a former marine pilot of Camden, that there was no acceptable (more than 75 feet of water) approach to Sears Island in either east or west Penobscot Bay for the 2[illegible]0,000 ton tankers Maine Clean Fuels says it will bring in. The chart shows water depths acceptable for 50,000-ton tankers or less, which means traffic will be four times that outlined in the application. Capt. Jennings also pointed out that the barges Clean Fuels says it will need entail 600 to 1200 feet of towing hawser, being hauled through the bay six times a day. According to

> Capt. Jennings, this will "virtually sweep the area of the lower bay clean of lobster pots".
>
> (Maine Times 3/19/71)

Throughout this pre-EIC hearing phase, town meetings became referenda on the refinery. The first to vote were Deer Isle, Stonington, Brooklin, Mt. Desert and North Haven, the first four voting unanimously against oil while the last voted 50-4 against oil. Then, during the week before the EIC hearings, "15 coastal communities, all of them located directly in the region affected by the proposed refinery, have voted in favor of town meeting resolutions which oppose the oil refinery. No communities have voted in favor of the refinery." (Maine Times 3/19/71) Members of the Hancock County Planning Commission also voted against oil by a margin of 16 to 1.

On the eve of the EIC hearings, as a mild forewarning of what might be expected if the refinery were approved, there was an oil spill in Penobscot Bay.

> The spill began Thursday, and the flow of leaking fuel oil which caused it was not totally shut off until Friday. Said to have originated in a ruptured underground pipe, the oil leak released disputed amounts from the tank farm run by National Services Corp., which operates the facility for Loring Air Force Base in Limestone. A fairly large, clearly discernible slick covered the waters of Long Cove, on the shores of the town of Searsport. According to a U. S. Coast Guard

> spokesman, the oil had "completely dissipated" by Saturday, although some residents claimed it was still noticeable in small creeks and along shore.
> (Maine Times 3/26/71)

And then the official EIC hearings began. There were six of them, stretching from March 23 to April 12. The first four sessions took place in the high school gym in Searsport; the last two were moved to the Belfast Armory after school officials "asked all parties to leave promptly at 11 p.m. last Thursday, even though an appeal was made to continue the hearings past that time." (Maine Times 4/9/71) The extra time was requested by CRAC attorney Hal Pachios, as some of the opponents "had made several trips to Maine from out-of-state for the chance to testify at extra expense and personal inconvenience.

One of these was John Sampson, a lobsterman from Buzzards Bay in Massachusetts, who has lost "several thousands of dollars" due to an oil spill in his area.

Holding marine charts, Sampson said, "My wife and I have driven up here twice to testify without results. I've been up since 4 a.m., and it would only take me 15 minutes to say my piece." (Maine Times 4/9/71)

The first hearing opened with a speech by Governor Curtis, the text of which was taken from the letter presented earlier. Although this speech has been called an "eloquent and sweeping introduction" (Maine Times 4/2/71), the first day was "much less than the ultimate joust. It was not a contest of any sort, because only of the two sides held the floor as Prof. Koons and the EIC commissioners acted as patient referees and gentle interrogators." (Maine Times 4/2/71) Perhaps because both sides of the controversy knew that the hearings were merely a prelude to a court test of the site law,

> both parties at the hearing's first day were careful in the extreme. The phrase "for the record" was used often as the talk droned on through tedium to apathy during the afternoon session (2 to 5) and then the evening (7 to 11:20) filibuster of Martin Barry, MCF consulting engineer, who spent more than three hours going over data, most of which is included in the MCF application filed weeks ago with the EIC.
>
> Barry followed the afternoon appearances of MCF president David Scoll, Kenneth Brown, an oil marketing consultant, and Robert Michaels, an executive of the Lummus Company, the firm that Scoll says will build the refinery. In sum, there was little new information (not in the application) presented, although Brown did have a sales forecast which showed MCF marketing 100 percent of Maine's petroleum needs in 1980. There was no explanation of how present oil suppliers would be persuaded to relinquish their markets. . .
>
> Bureaucracies were involved, not men; and, having come from Washington, the bureaucratic capital of the world, David Scoll knew how to filibuster, how to use time, how to talk the edge off a contest. He and his associates did that well.

> The 900 souls dwindled to less than 400, and the newsmen and women became depressed as their story disappeared in a sea of words. Like most of us who sat through that first day, they had forgotten the perspective given the event by the governor, they could not see through the procedural haze to the court test so distant but so clear on Maine's horizon. Like most of us, by 11:20 that night, everyone was -- at the least -- weary; or, like others, had developed splitting headaches.
>
> No matter what their condition, the entire assembly was relieved to hear Prof. Koons announce recess until the following afternoon (Wednesday), with many of them wondering why they had come expecting a contest which turned out to be a filibuster.
>
> (Maine Times 4/2/71)

The second hearing was not much more dramatic:

> And so it came to pass that on the second day and on the second night there was more talk of oil upon the waters, and the dividing of the oil from the waters. And the bringing forth of odor in the firmament, and the dominion of petroleum over the rocks and the beaches and the fish of the sea and over every living thing that moveth upon the Penobscot Bay area . . .
>
> This hearing was an attempt to wring technical information from the officials of Maine Clean Fuels, Inc. (MCF) and their witnesses.
>
> It wasn't very successful.
>
> MCF President David Scoll and his lieutenants repeatedly admitted they didn't have specific informa-

> tion requested by the EIC, or that data would have to be submitted at later, unspecified dates.
>
> From 3:40 p.m. to 11:20 p.m. last Wednesday (with a break for supper) EIC commissioners and staffers grilled the MCF team on its plans, specifications, and environmental safeguards in connection with the proposed refinery, but there was an obvious lack of understanding and trust in evidence.
>
> (Maine Times 4/2/71)

For example, a series of questions asked MCF officials by the EIC technical staff revealed that "MCF would have to 'reserve the right for revisions' of its mooring plans for ships in Penobscot Bay in case problems arose; that MCF doesn't have more 'detailed data' on currents in the bay . . ." (*Maine Times* 4/2/71) All in all,

> The record of the hearing's first two days -- used exclusively by MCF for the presentation of its case -- shows that the so-called oil men were unable to produce facts for almost every major aspect of the proposed oil refinery on Sears Island. They had no financial details; merely a letter of willingness to negotiate, pending EIC approval, from a Wall St. investment banking house. Even though they called themselves engineers, the MCF consultants could give no facts on the proposed dredging of Penobscot Bay, other than to say it would be a big job. (Considering the 100 years accumulation of pulp and paper wastes on

> the bay bottom, it may even prove an impossible job; but MCF has taken no test borings.) Even though they say they will employ all possible safeguards, the oil men have made no soil tests on Sears Island; they have made no independent tests of current flow in the bay; they were able to spell out no details of their purported arrangement with Ashland Oil Co. for subsequent plant management; they have no plans for landscaping the refinery; they have had no consultation with Army Engineers about their plan to build a mile-long pier. Each of these factual omissions, and scores more, was made plain by the oil men's own, prepared testimony. The alarming lack of relevant facts, in other words, is a matter of record.

(Maine Times 4/2/71)

Among the most significant testimony presented at the third and fourth sessions of the hearings -- during which the opposition had a chance to present witnesses --

> were a series of key questions directed to MCF by Charles L. Boothby, executive director of the state's Soil and Water Conservation Commission, and testimony offered by Robert L. Dow, research director of the Maine Department of Sea and Shore Fisheries.
>
> Boothby's questions were important because they seemed to have caught MCF with its

pants down on one of the most basic qualifications of the state's site selection law, which -- under Section 484 -- requires any development proposal to meet four criteria: proof of financial capacity and technical ability to meet pollution controls; provision for adequate traffic movement; proof that the natural environment, scenic character, and property values won't be harmed; and assurances that "the proposed development will be built on soil types which are suitable to the nature of the undertaking."

It was this last provision on which Boothby zeroed in, and to which MCF responded with an almost puzzling nonchalance.

Boothby pointed out that some of the soil and geology information presented in the MCF application was in reality describing "nearby property and not Sears Island itself."

Citing the Penobscot Bay Physical Resources Report, Boothby said, "The island is mantled with a thin layer of post-glacial rubble material, gravel cobbles, silts and sand. Some clay is noted below the coarse rubble."

Yet Boothby said the MCF application says about one half of the island has a surface material called marine clay.

"Would you care to comment on this apparent discrepancy?" Boothby asked MCF.

Martin Barry, MCF engineer, said his group got the information from the Maine Department of Economic Development (DED).

Boothby also wanted to know what type of soil or soils the other half of the island consists of, and the location of the water tables, and further information about foundation tolerances for oil storage tanks and the refinery itself.

MCF didn't have many answers.

"Is it true that you have not done any soils investigations on the island itself?" Boothby asked.

"Yes," Barry answered . . .

Although Boothby's questions were only a small part of the proceedings, most qualified observers saw them as being potentially damaging to the MCF case.

EIC chairman Dr. Donaldson Koons wanted to know what the pumping rate of fuel from vessel to plant would be, and Barry took a few moments to calculate some figures.

"This is the kind of information we need on which to base a decision," Koons said. "You understand that, don't you?" . . .

Wyman pointed out that the EIC will require a "definitive fire-fighting capability from you at the earliest date," and Barry said that information was in the MCF application.

"But there's no detail," Wyman said, "just a conception. We need some detailed engineering."

MCF said it was "not completed at this time."

"I'm sure you realize we need it in order to make any approval," Wyman pressed.

Scoli offered to let the EIC "look over our shoulder" while doing the planning.

MCF also said that water

> vapor would be visible for 40 to 50 feet above the refinery's stack, and that a 200,000-ton tanker traveling at five knots would make less wake than a lobster boat going at the same speed.
>
> After the questioning of MCF, supporters of the oil refinery made their remarks, including spokesmen for the Bangor and Aroostook Railroad, Delta Chemicals, the Maine State Federated Labor Council, Great Northern Paper Co., the Committee for Full Use of Our Resources (FOR), and an independent Boston fuel dealer who finally admitted that he probably wouldn't be buying any of MCF's products anyway.
>
> Opponents to the oil refinery finally got their chance to start to testify late Tuesday evening, and only Alfred Meister of the Atlantic Sea Run Salmon Commission, and Howard Spencer of the Maine Inland Fisheries and Game Dept. spoke against MCF.

Further testimony at these hearings was offered by a wide range of anti-oil witnesses. Speaking for the fishermen in the area was Ossie Beal, while Dr. James A. Fay, professor of mechanical engineering at MIT and chairman of the Air Pollution Control Commission for Boston, underscored the justice of their fears by outlining what would most likely happen in the case of almost inevitable spills:

> "Unless contained, oil spills in the unloading area will spread to cover large areas and drift ashore within several hours.

"It is very unlikely that the planned containment systems will be effective under the average conditions of wind, waves and tidal currents found near the unloading area.

"There is no possibility of containing large spills in the remaining areas of the bay.

"The operational procedures proposed to prevent spillage are unlikely to be upheld in practice" . . .

Dr. David E. Harrison, associates staff scientist at the Jackson Laboratory at Bar Harbor, submitted evidence that oil may induce caner, by getting into the marine food chain even through air pollution . . .

Allen Walker, an MIT graduate and a partner in a navigational equipment firm in Boston, says flatly that MCF's navigational systems proposals are "not complete; it has both weak and missing links."

Walker, for the past 15 years an electronic systems designer, also zeroed in on the question of fog in Penobscot Bay.

"The occurrence of fog is of interest, because it makes navigation much more difficult. It is ordinarily grounds for closing an airport," he said.

MCF logged 847 hours per year of fog at Fort Point near Searsport, and 888 hours at Owls Head, but Walker says it's more relevant to know that Matinicus Rock logs 1,487 hours, and Manana Island, near Monhegan, logs 1,394, and these areas are where the supertankers will have to make their approach to the bay.

Walker questions the MCF plan

> for widening channels in the bay, and computes that the firm would have to spend some $160 million (more than the projected cost of the oil refinery) in order to widen 1,500 yards.
>
> "We wonder if Maine Clean Fuels is really willing to spend this sort of money," he said.
>
> (Maine Times 4/9/71)

John Lewis spoke, and others testified that "polluted air, from sulfur dioxide and ozone, is responsible for stunting white pine, that lack of oil in this country is directly related to the war in Indochina, and that the oil industry's 'sincerity to maintain high preventive and clean-up standards is best exemplified by their present suit against the state's (Maine's) oil handling bill.'" (Maine Times 4/9/71)

So, with the opposition in high gear, the hearings entered the final two sessions.

> One of the most telling witnesses against the MCF proposal was John R. Rand, of Freeport, former Maine state geologist, and consultant and officer for several large industrial firms in North America.
>
> Rand's testimony hinged on the lack of soil and geological information submitted by MCF in its application to build the refinery. That information is one of four criteria under the state's Site Selection Law, Sec. 484, that states any "proposed development will be built on soil types which are suitable to the nature of the undertaking."
>
> MCF has admitted that it hasn't taken any soil tests so far, and Rand pointed out that "there are a number of inconsistencies, evasions or inaccuracies in the application

in these areas". . .

"The application states (pages 40-42) that MCF has not made any test borings and that it will develop information on type, depth and properties of bedrock or soils after its application has been approved," Rand said.

"Then, the application reverses itself and days, yes, soils information including type, phase and engineering characteristics have been obtained for the site, and that soils are suitable for the project development. No details as to soils characteristics are given in the application.

"It is stated that soils information and engineering characteristics of the soils are not pertinent at this stage of the project.

"It is my experience in proposed heavy constructions of large anticipated capital investment that this sort of information is collected at the very outset of any project," Rand said . . . .

"In other words, before the land is acquired and formal permits for doing to project are sought, it is determined whether the site's natural characteristics, slopes, soils, bedrock, etc., will permit feasible completion of the proposed project." . . .

"To sum it up, Maine Clean Fuels has in no way determined or investigated whether the proposed development can actually be built on soils types which are suitable to the nature of the undertaking."

Rand also said MCF's earthmoving projections for Sears Island contradict themselves, and that the plot plan study (exhibit 26 in the application) is incorrect to the point of grotesque-humor.

"It is not possible to use the application's plot plan study to estimate volumes of earthmoving for the tank farm and service terraces because the plot plan presented with the application does not even fit . . . the entire island when drawn to the same scale, unless part of it hangs out over waters of Penobscot Bay."

The vision of a refinery plan so inaccurately drawn up that it didn't fit an island and thus would hang out over the bay as only briefly amusing to those at the hearing.

Rand estimated there is a possibility that MCF would have to move and dispose of as much as 100 million cubic feet of soils and rock at the planned island site, not less than 180 million cubic feet of dredging at the island approaches, and another 10 million tons of "presumably solid rock" to be blasted out of the Junken Ledge area in the middle of the bay.

According to MCF's own estimates in its application, Rand said, the refinery would "as a normal procedure" allow three gallons of some kind of oil to ooze into the bay every day from the operation, and that the area's tough weather patterns could cause "possible rupture and failure of oil transmission lines and even oil storage tanks themselves."

Rand also said there isn't enough fresh water in the area for MCF's needs, and that the application is "self-contradictory" on fresh water requirements for the plant. He cited four places in the MCF application that stated different amounts of water would be needed, and that the best guess was that 3,600 gallons per minute was a "rough starting estimate." That kind of water isn't available in the area, according to Rand, unless some Mosquito Mountain wells (nearly 10 miles away from the island) were utilized, and even they wouldn't be able to provide that much water according to hydrological data.

He warned that Penobscot River water might be induced to break through into those wells by "heavy pumping" thus destroying the natural fresh water "as a source of potable water for future domestic or light industrial use.". . .

Another witness was Cornelius J. Wilson, former chemical engineer for several oil firms and now a professor at the University of Rhode Island.

Wilson, who was the project engineer on the giant Tidewater refinery in Delaware, criticized MCF's engineering data in great detail, and said the proposed refinery would be "no different than any other refinery; it has to have an odor. That's a definite statement.". . .

Eventually, the hearings ended, 60 hours after they started. Two more happenings occurred before the EIC handed down its decision. The commission received the letter requested by C[illegible]C from Snyder that ment, in effect, that Scoll's oil import allocation ticket was a more or less worthless piece of paper allowing him to import only residual fuel oil, oil with all the higher-priced by-products already refined out of it. And MCF submitted changes in its plans and more of the information requested at the hearings.

Apparently, these changes were not good enough. On July 26, 1971, the Environmental Improvement Commission voted against allowing MCF to build the proposed refinery.

> In rejecting the plan, the EIC decided that MCF didn't have enough money or technical ability to meet Maine's air and water pollution control standards; would hurt the area's existing natural resources, environment, and property values; and couldn't provide adequate water supplies for its own operation.
>
> The EIC also felt that the MCF plan couldn't prove that adequate provision would be made for "traffic movement" between the proposed project and existing public roads, and that "the public health, safety, and general welfare" wouldn't be sufficiently protected.
>
> (Maine Times 7/30/71)

The full text of this decision is appended.

> The EIC decision came after a 10-hour meeting last week by a 5-2 vote against the refinery. Voting for MCF were Merle F. Goff, Bangor's City manager, and Edgar W. Thomas, of Sebago Lake.
>
> Voting against MCF were Dr. Donaldson Koons, EIC chairman; Orlando Delogu, Portland; Mrs. Jean Childs, Portland; Charles Wyman, Lisbon Falls; and Mrs. Evelyn Jephson, Waldoboro.
>
> Two other commission members paired their votes. Llewellyn Colomy of Hallowell said he would vote against MCF but was out of the country. Norman Gleason of Fort Fairfield favored the MCF plan but paired his vote with Colomy.
>
> The other member of the EIC. Curtis Hutchins of Bangor, absented himself from voting and the public hearings on the matter because as an officer of Bangor and Aroostook Railroad there would have been the question of conflict of interest. BAR owns Sears Island and supported the MCF plan.
>
> In sum, Maine Clean Fuels wasn't able to show the EIC that the proposed refinery wouldn't violate state statutes, and it couldn't meet provisions set down by law.
>
> (*Maine Times* 7/30/71)

MCF had until August 21 to appeal the ruling to the Maine Supreme Court, and on August 11 it did. "Assistant Attorney General Robert Fuller explained that in court, Maine Clean Fuels 'at least must show that the commission's findings of facts and conclusions are not supported by the facts as reported during the hearing.'" (Maine Times 8/20/71) MCF was unable to prove this discrepancy, so two years later

> The Maine Supreme Court removed any shadow of doubt over the constitutionality of the Site Approval Law by rejecting the appeal unanimously. By then Scoll and his shy sponsors were long gone from the stage which they had borrowed from better-known actors . . .
>
> (Bradford, 317)

THE MEDIA

> Omaha, Nebraska -- For the most stupid stance of 1971 by a state department head anywhere. I nominate James O'Keefe. Yes, Mr. O'Keefe's pigheadedness on the Sears Island oil port issue was duly recorded in the midwestern press. . .
>
> (Bradford, 306)

Although either the midwestern press or the letter's author spelled Keefe's name wrong, this letter makes a very important point: The Sears Island oil refinery question received attention from news media throughout the country -- so much attention, in fact, that it would have been impossible for a decision to have been reached in any but a thoughtful, thorough and above-board manner. Whether it was the public outcry that stirred the media into action or the other way around is difficult to determine, but certainly the two sustained each other.

The Maine Times gave the drama considering able coverage, but this newspaper (which does, in fact, have a fairly wide readership outside Maine) was joined by many others. In Maine, as early as January 29, the Republican Journal (Belfast), the Bucksport Free Press, the Island Ad-Vantages (Stonington), and the Ellsworth American had also already come out in opposition to the refinery. At that date only the Bangor Daily News, "normally conservative Republican, . . . said it would 'keep its fingers crossed' in the hopes that the project would become reality." (Maine Times 1/29/71) And that paper soon modified its position to one giving moderate support to the resolution proposing a moratorium on all oil-related activity along the Maine coast, calling it "'a reasonable protective move.'" (Maine Times 2/12/71) The newspapers in Stonington and Camden went so far as to call for Keefe's resignation after the public meetings in those two towns.

In the national press, the refinery proposal received attention -- very negative editorial attention -- quite early also. On February 3 the Boston Globe published an editorial "which blasted the oil plan and said putting a refinery on Sears Island made about as much sense as building a paper mill at Walden or a hamburger stand at Mount Vernon." (Maine Times 2/12/71)

But the first event to attract major nationwide coverage was the hearing on February 18 in Searsport arranged by Osborne to give the newsmen the pro-oil side of the issue. Further details on that meeting, the media in attendance, and the importance that Osborne attached to that attendance can be found in the report about that meeting included earlier in this study.

The hearings themselves of course attracted considerable media attention. Of the first session, the Maine Times (4/2/71) reported:

> For such a prosaic, long day, there was much interest from news media. CBS News was there, two Maine TV stations sent crews, Time magazine was represented for a story now scheduled for next week; the New York Times (which had written an editorial for the occasion), The Christian Science Monitor and the Washington Post carried stories, as did every Maine daily. Like the 900 souls who sat quietly in the audience, obeying to the letter Chairman Koons' request for "the good manners for which Maine is well known", the media people had come to see the classic contest, the Ali-Frazier fight of the environmental world.

But it didn't turn out that way. MCF filibustered, "and the newsmen and women became depressed as their story disappeared in a sea of words." (Maine Times 4/2/71) After four sessions, however, both the New York Times and the Boston Globe felt they had heard enough to come out with strongly anti-oil editorials:

> The New York Times said Penobscot Bay is "gravely threatened" by the refinery, and "would represent a development wholly out of keeping with the characteristics of this magnificent maritime wilderness."
>
> It also called the coast of Maine a "precious American legacy."

> The *Boston Globe* was less gentlemanly about the matter and pointed its finger directly at Sen. Edmund Muskie as one who could put a stop to it.
>
> "If the oil industry is really interested in earning a reputation for concern for the environment it ought to leave Penobscot Bay alone," it said.
>
> "If Sen. Edmund S. Muskie is really interested in preserving his reputation for concern for the environment, he ought to tell the oil industry to leave Penobscot Bay alone.
>
> "No more wicked, cruel, greedy, foolish, misguided, short-sighted, tasteless and generally disreputable proposals have come to public attention recently than the plan to build an oil refinery on Sears Island off Searsport, Me."
>
> (*Maine Times* 4/9/71)

On the whole, the news media added the weight of their voices to the opposition stance on the refinery question, and at the very least, they helped to keep the proceedings completely honest.

THE LAW

Standing over the shoulder of the other actors in this drama was Maine's then newly enacted Site Location Law. As the "setting" for this play, it played an extremely important role. How, indeed, did the hearings fulfill the letter of this law such that in the end, the Maine Supreme Court turned down MCP's appeal of EIC's ruling?

Logistically, the EIC met all the appropriate deadlines, made all the appropriate motions, poured through all the appropriate material. But more important, it came up with negative answers to the four important questions posed in the law:

1. Has adequate financial backing to take all necessary environmental safeguards been proved?
2. Has adequate care been taken to provide for orderly traffic movement to and from the proposed site?
3. Will the proposed development fit harmoniously into the natural setting, upsetting neither the "existing uses, scenic character, natural resources (n)or property values" of the area?
4. Has evidence been provided that the soil characteristics of the site are suitable for building the proposed development?

It came up with negative answers as much because of the lack of hard facts from MCF supporting their proposal as it did because of the inclusion of facts presented by the opposition.

> At one point on the first act of last week's Environmental Improvement Commission (EIC) oil hearings in Searsport, EIC commissioner Charles Wyman said to Martin Barry, a consulting petroleum engineer for Maine Clean Fuels (MCF): "Mr. Barry, you are going to make it difficult for us to approve an installation for which you haven't the engineering. . . We have to know precisely what you are going to put in here . . . You can't just

> stand there and raise your right hand and say 'I will take care of oil spills,' and then not tell us how. We've got to have more than that. . ."
>
> At another point, early on in the hearings, Prof. Donaldson Koons, EIC chairman, said, "Emotional appeals to this issue (oil and the Maine coast) are of limited help; the decision here must be made on the basis of relevant facts. . ."
>
> At still another point, EIC commissioner Orlando Delogu said to David Scoll, MCP president, "We are not going to have the applicant (MCP) trade on this commission's license."
>
> Together, the three statements get close to the heart of the drama being played out in the Searsport High School gym, and they illustrate some special aspects of this hearing which bear further exploration.
>
> Maine's Site Approval Law, which is being tested so strenuously in Searsport, is a new law. There are bound to be imperfections, gaps and gray areas in its interpretation. But there can be little doubt, in our opinion, that there is crystal clarity about the points made by commissioners Wyman and Koons. Whatever else holds, the decision in Searsport must be based on facts; and it is just as clear that thus far, the facts are not forthcoming.
>
> (Maine Times 4/2/71)

For specific examples of this lack of data, one need only read the accounts of the hearings -- especially the first two -- presented earlier.

However, even while Governor Curtis supported his commissioner, he

> urged opponents of the refinery plan to gather their facts on why the oil installation will have adverse effects on the existing uses of Penobscot Bay and its communities. According to the site selection law, consideration of such "adverse effects" will be one of the key factors helping to determine the EIC's decision. If oil opponents present their case in accurate detail, the presentation will also be taken into account if the EIC decision is challenged in the courts.
>
> (Maine Times 2/12/71)

So what were some of the damaging facts that were brought forth?

In answer to the first question it was determined that although MCF had handshake agreements with a banking firm and Ashland Oil for financial backing, both were holding off on any kind of contractual agreement until after the hearings.

> Scoll's refinery economics, relevant because environmental controls represented an added cost which only an adequately financed firm can afford, were also unstable. His principal backer, the Ashland Oil Company, insisted on remaining well in the background, partly out of fear that its products might face a conservationist boycott. Ashland would vouchsafe no more than a willingness to negotiate

> with Scoll if his project was approved. The banking firm of Kuhn, Loeb & Company took the same position on financing. Their reticence left Scoll in an impossible position, which accounted for many of the mistakes that his opponents seized on. Not only was he overextended personally, but he had also to promise large expenditures for complex technologies without any apparent capital or experience.
>
> (Bradford, 316)

Probably the most emotionally charged testimony revolved around facts supporting a "No" answer to the third question. A great deal of testimony was offered about what oil spills and barge traffic would do to the livelihood of the many bay-area residents who made their living harvesting the ocean -- not only by the lobstermen themselves but by navigators and ship captains also. And to prove the point, one witness, Marine Resources biologist Robert Dow, outlined the financial loss effected by the minor spill that had occurred the week before the hearings.

Two witnesses especially -- both qualified for the task -- questioned the completeness and validity of MCF's data purporting to answer the fourth question. Excerpts from the testimony of these two witnesses, Boothby and Rand, is included earlier in this report.

But perhaps the most important thing to remember is that without the Site Location Law, there might never have been hearings; without the law, David Scoll might have come, built his refinery, and gone before the people of Maine could stop him. Not only did the law provide a framework within which to judge the case, but it provided the stumbling block to development which made the case necessary. And because the EIC and the people of Maine were aware of this law's importance, they treated it with the respect which won the opponents their case -- both in the initial EIC decision and in the final judgment of the Maine Supreme Court.

MAJOR LESSONS

The primary lesson learned by the Maine public during the course of the Sears Island hearings was the recognition that governing bodies must first design and produce the legal tools for allowing and channeling public participation. Without the Site Location Law as a matrix for such participation (pro or con the proposed oil refinery for the island) the Maine debate over the issue would quite likely have proven fruitless and surely much of the human energy expended on both sides would have been misdirected.

Among the secondary lessons are these:

1) The effectiveness of public participation in energy debates is in direct relation to the accuracy of the information that public has available and the specialized expertise the public is able to acquire to interpret and articulate such information. In other words, the public must not only know as much as possible about what is going on, but must have the knowledge to act on it;

2) A sloppily prepared effort by the private

sector (the energy developer and/or promoter) is more damaging than any opposition. Those energy developers who see the public as "suckers" are likely to see Barnum's adage disproved;

3) The media can and does play a role in the effectiveness of public participation. Without media coverage, the public is less liekly to become involved; conversely, public participation can become intense if media coverage is the same;

In the final analysis, the conclusion to any public debate will be written in the courts. It is well, from the start, to pay strict attention to legal details and to keep thorough records of all public proceedings.

APPENDIX A

TEST AT SEARS ISLAND
CHRONOLOGY

Sept. 25, 1970	South Portland votes against oil
Jan. 8, 1971	Scoll sends letter to Richard Kilroy, president of Maine Port Authority
Jan. 26, 1971	Special public meeting is held at Deer Isle elementary school for public discussion of the question, "Why Oil?"
Feb. 8	MCF plans for refinery are officially submitted to EIC
Feb. 9	Anti-oil resolution sponsored by MacLeod and Sewall is passed overwhelmingly by both houses of legislature
Feb. 12	Public meeting is held at the Opera House in Camden
Feb. 13	Edmund Muskie comes out against the refinery
Feb. 18	Pro-oil meeting for Searsport residents is held
Feb. 19	Audubon Society comes out in opposition to refinery
Feb. 24	Anti-oil bill is introduced in the legislature by Richard Berry
Feb. 26	Anti-oil meeting is held at Searsport House; CRAC announces opening of headquarters in Belfast
March 1	Meeting is held at Belfast Area High School
March 5	Annual town meetings in Deer Isle, Stonington, Brooklin, Mt. Desert, and North Haven vote against oil
March 10	Public legislative hearing is held on Berry's bill
March 15	Isleboro votes against oil
March 18	Oil spills in Penobscot Bay
March 19	Hancock County Planning Commission votes 16-1 against oil
March 23, 24, 30 April 1, 8, 12	Six official sessions of EIC hearings are held
May 10	Letter is received from Snyder
May 28	MCF submits changes in plans
July 26	EIC hands down ruling against MCF

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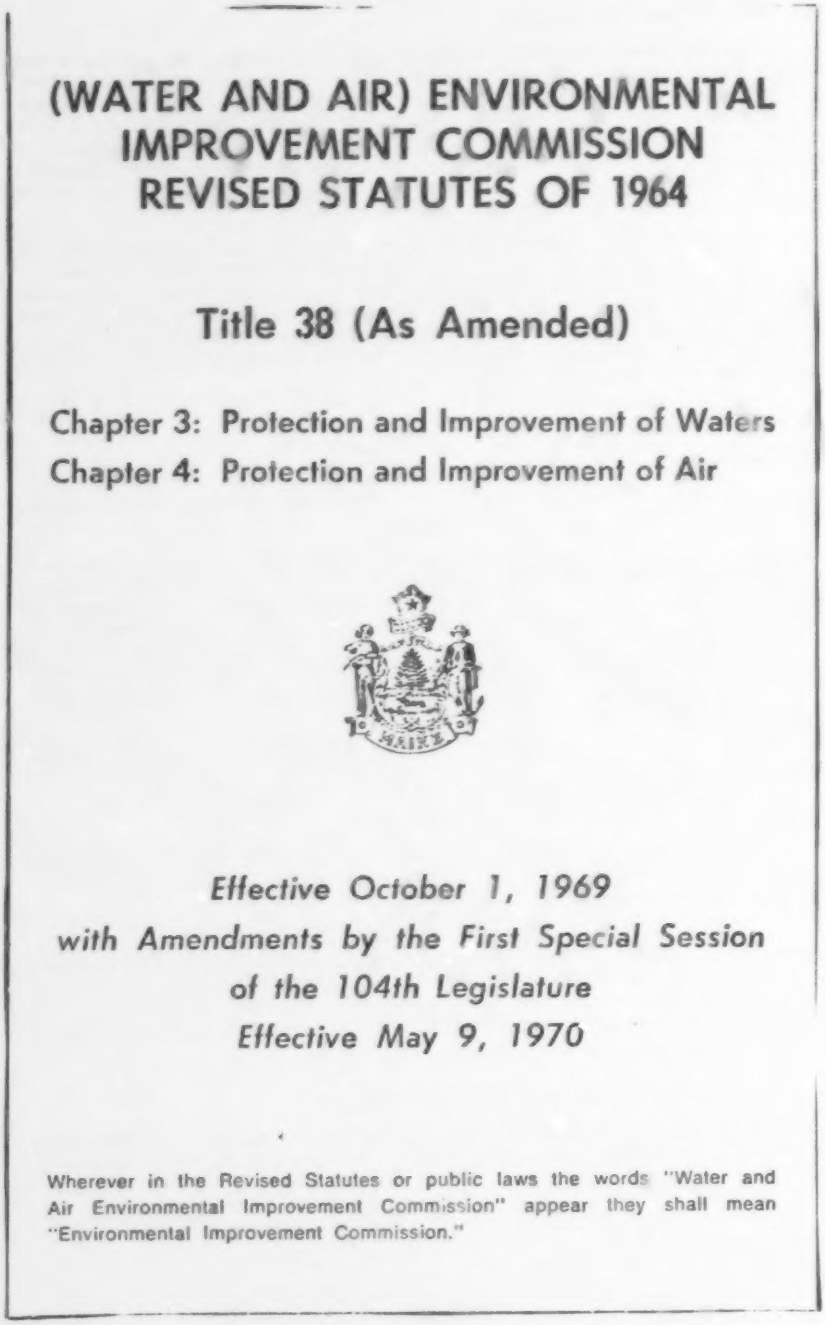
APPENDIX A
(CONCLUDED)

Aug. 11	MCF appeals to Maine Supreme Court
Aug., 1973	Supreme Court judges in favor of EIC

APPENDIX B

TEST AT SEARS ISLAND



(WATER AND AIR) ENVIRONMENTAL IMPROVEMENT COMMISSION REVISED STATUTES OF 1964

Title 38 (As Amended)

Chapter 3: Protection and Improvement of Waters
Chapter 4: Protection and Improvement of Air

MAINE

Effective October 1, 1969
with Amendments by the First Special Session
of the 104th Legislature
Effective May 9, 1970

Wherever in the Revised Statutes or public laws the words "Water and Air Environmental Improvement Commission" appear they shall mean "Environmental Improvement Commission."

ARTICLE 6. SITE LOCATION OF DEVELOPMENT

(1970, c. 571, § 2)

Sec. 481. Findings and purpose

The Legislature finds that the economic and social wellbeing of the citizens of the State of Maine depend upon the location of commercial and industrial developments with respect to the natural environment of the State; that many developments because of their size and nature are capable of causing irreparable damage to the people and the environment in their surroundings; that the location of such developments is too important to be left only to the determination of the owners of such developments; and that discretion must be vested in state authority to regulate the location of developments which may substantially affect environment.

The purpose of this subchapter is to provide a flexible and practical means by which the State, acting through the Environmental Improvement Commission, in consultation with appropriate state agencies, may exercise the police power of the State to control the location of those developments substantially affecting local environment in order to insure that such developments will be located in a manner which will have a minimal adverse impact on the natural environment of their surroundings.

Sec. 482. Definitions

As used in this subchapter:

1. Commission. "Commission" means the Environmental Improvement Commission.

2. Development which may substantially affect environment. "Development which may substantially affect environment" means any commercial or industrial development which requires a license from the Environmental Improvement Commission, or which occupies a land area in excess of 20 acres, or which contemplates drilling for or excavating natural resources, excluding borrow pits for sand, fill or gravel, regulated by the State Highway Commission and pits of less than 5 acres, or which occupies on a single parcel a structure or structures in excess of a ground area of 60,000 square feet.

3. Natural environment of a locality. "Natural environment of a locality" includes the character, quality and uses of land, air and waters in the area likely to be affected by such development, and the degree to which such land, air and waters are free from non-naturally occurring contamination.

4. Person. "Person" means any person, firm, corporation or other legal entity.

Sec. 483. Notification required

Any person intending to construct or operate a development which may substantially affect local environment shall, before commencing construction or operation, notify the Commission in writing of his intent and of the nature and location of such development. The Commission shall within 14 days of receipt of such notification, either approve the proposed location or schedule a hearing thereon in the manner hereinafter provided.

Sec. 484. Hearings; orders; construction suspended

In the event that the Commission determines to hold a hearing on a notification submitted to it pursuant to section 483, it shall hold such hearing within 30 days of such determination, and shall cause notice of the date, time and place thereof to be given to the person intending the development and in addition shall give public notice thereof by causing such notice to be published in some newspaper of general circulation in the proposed locality, or if none, in the state paper; the date of the first publication to be at least 10, and the last publication to be at least 3, days before the date of the hearing.

At such hearing the Commission shall solicit and receive testimony to determine whether such development will in fact substantially affect the environment or pose a threat to the public's health, safety or general welfare.

The Commission shall approve a development proposal whenever it finds that:

1. Financial capacity. The proposed development has the financial capacity and technical ability to meet state air and water pollution control standards, has made adequate provision for solid waste disposal, the control of offensive odors, and the securing and maintenance of sufficient and healthful water supplies.

2. Traffic movement. The proposed development has made adequate provision for loading, parking and traffic movement from the development area onto public roads.

3. No adverse affect on natural environment. The proposed development has made adequate provision for fitting itself harmoniously into the existing natural environment and will not adversely affect existing uses, scenic character, natural resources or property values in the municipality or in adjoining municipalities.

4. Soil types. The proposed development will be built on soil types which are suitable to the nature of the undertaking.

At hearings held under this section the burden shall be upon the person proposing the development to affirmatively demonstrate to the Commission that each of the criteria for approval listed in the preceding paragraphs have been met, and that the public's health, safety and general welfare will be adequately protected.

The Commission shall adopt, and may amend and repeal rules for the conduct of hearings held under this section in the same manner as provided for the adoption, amendment and repeal of rules of practice before it. A complete verbatim transcript shall be made of all hearings held pursuant to this section.

Within 45 days after the Commission adjourns any hearing held under this section, it shall make findings of fact and issue an order granting or denying permission to the person proposing such development to construct or operate the same as proposed, or granting such permission upon such terms and conditions as the Commission may deem advisable to protect and preserve the environment and the public's health, safety and general welfare.

Any person who has notified the Commission, pursuant to section 483, of his intent to create a development substantially affecting local environment shall, upon receipt of notice that the Commission has determined to hold a hearing under this section, immediately defer or suspend construction or operation with respect to such development until the Commission has issued its order after such hearing.

Sec. 485. Failure to notify Commission; hearing; injunctions; orders

The Commission may at any time with respect to any person who has commenced construction or operation of any development without having first notified the Commission pursuant to section 483, schedule and conduct a public hearing in the manner provided by section 484 with respect to such development.

The Commission may request the Attorney General to enjoin any person, who has commenced construction or operation of any development without having first notified the Commission pursuant to section 483, from further construction or operation pending such hearing and order. Within 30 days of such request the Attorney General shall bring an appropriate civil action.

In the event that the Commission shall issue an order, denying a person commencing construction or operation of any development without first having notified the Commission pursuant to section 483, permission to continue such construction or operation, it may further order such person to restore the area affected by such construction or operation to its condition prior thereto or as near as may be. to the satisfaction of the Commission.

Sec. 486. Enforcement

All orders issued by the Commission under this subchapter shall be enforced by the Attorney General. If compliance with any order of the Commission is not had within the time period therein specified, the Commission shall immediately notify the Attorney General of this fact. Within 30 days thereafter the Attorney General shall bring an appropriate civil action designed to secure compliance with such order.

Sec. 487. Judicial review

Any person, with respect to whose development the Commission has issued an order after hearing pursuant to section 484 may within 30 days after notice of such order, appeal therefrom to the Supreme Judicial Court. Notice of such appeal shall be given by the appellant to the Commission. The proceedings shall not be de novo. Review shall be limited to the record of the hearing before and the order of the Commission. The court shall decide whether the Commission acted regularly and within the scope of its authority, and whether the order is supported by substantial evidence, and on the basis of such decision may enter judgment affirming or nullifying such determination.

Sec. 488. Applicability

This subchapter shall not apply to any development in existence or in possession of applicable state or local licenses to operate or under construction on January 1, 1970 or to any development the construction and operation of which has been specifically authorized by the Legislature prior to the effective date hereof. or to public service corporation transmission lines.

APPENDIX C

EIC COMMISSIONERS 1971 - 1972

Mr. Llewellyn Colomy Hallowell, Maine	(Conservation)
Mr. Norman T. Gleason Fort Fairfield, Maine	(Public)
Merle F. Goff Bangor, Maine	(Municipal)
Mrs. Evelyn Jephson Waldoboro, Maine	(Conservation)
Dr. Donaldson Koons, Chairman Oakland, Maine	(Air Pollution)
Mr. Edgar W. Thomas Sebago Lake, Maine	(Air Pollution)
Mr. Charles Wyman Lisbon Falls, Maine	(Industry)
Orlando Delogu Portland, Maine	(Public)

DIRECTOR

Mr. William R. Adams, Jr.
Lewiston, Maine

CHIEF ENGINEER

Mr. Raeburn W. Macdonald
Readfield, Maine

*P. Andrews Nixon Harpswell	INDUSTRY - (withdrew from hearings, conflict of interest)

BIOGRAPHY OF AUTHOR

John N. Cole - (Yale, BA) - Co-founder (with Peter Cox) and currently editor of Maine Times, a state-wide, weekly journal of opinion (circulation 20,000). Prior to the start of Maine Times in 1968, Cole had been editor of the daily Bath-Brunswick Times Record, the Brunswick Record and the Kennebunk Star. Since his newspaper career began in Maine 18 years ago, his columns and editorials have earned numerous regional and national awards, including the Missouri Medal and the New England Academy of Journalists Yankee Quill award.

Recent articles about Maine authored by Cole have been published in The New York Times (Op Ed), the New York Times Sunday Magazine, Harper's, the Country Journal, Yankee, Newsday, Massachusetts Horticulture and other publications. He is the author of a bi-weekly column which appears regularly in New England, the Sunday Boston Globe magazine.

Cole's book, "In Maine", was published in 1974 by E. P. Dutton; a second book, "From the Ground Up", has been completed and will be published this summer by Atlantic/Little-Brown. A third book, also to be published by Atlantic/Little-Brown is in progress.

He is a director of several environmental organizations and is currently serving on the board of the National Audubon Society.

Cole is currently a visiting lecturer at Bowdoin College where he has taught "Writing for Journalism" for the past three years.

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BIG ROCK POINT

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BIG ROCK POINT
PREPARED BY

ERASMUS H. KLOMAN* AND JOAN SCHUMAKER**

ABSTRACT

The plutonium recycling issue at Big Rock Point Nuclear Power Plant illustrates the impact a local organization can have on energy related decision-making not only within the community but also on national energy policy. The West Michigan Environmental Action Council (WMEAC) was able to elevate a local licensing action into a broad scale generic rulemaking. It compelled the Atomic Energy Commission (later the Nuclear Regulatory Commission) to initiate a public proceeding as part of its decision-making process on a basic question of nuclear power policy. The final decision is awaiting the completion of a generic environmental impact statement on mixed-oxide fuels (GESMO).

While the present Nuclear Regulatory Commission's (NRC) commitment to studying plutonium recycling arose out of a rulemaking that preceded Big Rock, WMEAC's efforts served to crystallize and hasten that action. When the NRC action would have otherwise occurred is a matter of conjecture. WMEAC, in their petition to intervene in the Big Rock license action, asked whether the AEC should permit plutonium recycle technology in an individual plant, i.e. Big Rock, before it considered the overall safety problems and environmental impact of this new development

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*The National Academy of Public Administration
**The University of Michigan

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in nuclear power production. The question centered on whether the Big Rock facility's use of increased amounts of plutonium could be approved on the basis of a discrete environmental impact statement in lieu of completion of the GESMO. As a result, in part, of WMEAC's court suit, the Commission decided some two years later to halt the Big Rock proceedings and to step back for a review of its existing policies.

The present review includes a consideration of the generic issues raised by plutonium recycling, the question of interim licensing, and, in a collateral rulemaking proceeding, the question of financial aid to intervenors which was raised by the Council in the Big Rock case. The ultimate result has been the recognition of the intervenor's role in the determination of a sensitive policy issue before a Federal agency, and the public's involvement in that decision-making process both nationally and locally.

BACKGROUND

Consumer Power Company's nuclear power plant, known as Big Rock Point in Charlevoix, Michigan, is one of the smallest (70MWe) of the nation's currently operating reactors. It is located on the shoreline of Lake Michigan high up on the lower peninsula. The facility has been using mixed oxide fuel in amounts of less than 50 kilograms since 1969, under a license amendment (Number 3) granted by the Atomic Energy Commission in April of that year.[1] No challenge has been made to that level of use of plutonium-enriched fuel, and this practice has continued to the present without incident.

The controversy concerning Big Rock's use of this fuel was stimulated by a subsequent amendment (#4) to the Big Rock license granted by the AEC in December, 1972. That amendment granted authority to treble the effective plutonium core load from 50 kgs to 150 kgs. In response to the utility's application, the AEC authorized the amendment as a routine matter without hearings and with no public notice.

The granting of amendment 4 occurred during a unique period in the history of AEC regulations concerning public notice. Prior to August, 1972, all actions with significant hazards considerations were to receive 30 days notice before the action was taken. Those actions which the Commission considered to involve no significant hazards received what is called post noticing. This latter procedure included a description of the nature of the amendment to a license and a statement on where the safety analysis report could be found. Citizen intervention was all but precluded in actions deemed to involve no significant hazards.[2]

From August 1972 to April 1973, when the public notice regulation was changed back to its original form, no public notice was required for amendments not involving significant hazards. The approval of amendment #4 occurred during this period.[3] In the view of AEC, the request of Consumers Power Company raised no questions of reactor performance or safety requiring more thorough review than had previously been conducted for amendment #3, or a requirement for public participation. In fact, the AEC review of CPC's application for a license amendment led to the conclusion that the environmental impact of the added plutonium core leading would be equal to or less than uranium.

That was not the view to be taken by a small number of citizen activists in Michigan. The first alert picked up by one of these activists came in the form of a little noticed report appearing, not in the local press, but in the national publication, Nucleonics Week of December 21, 1972. That journal carried a reference to the new amendment to Big Rock Point's license including a quotation of a utility spokesman saying, "We are on the way to another milestone in the history of nuclear power."

This article came to the attention of one of Michigan's most outspoken and committed opponents of nuclear power, Mary Sinclair, of Midland, Michigan.[4] Mrs. Sinclair played a critical but brief role in sparking the series of actions revolving around the Big Rock case.

Her objections were based on concern that Michigan was being used as a guinea pig for a dangerous experiment.

While previously employed as an editor by Dow Chemical Company in Midland, Mary Sinclair had come to be increasingly concerned about a number of environmental issues including, in particular, nuclear power. So deep was this concern that she enrolled as a graduate student at the University of Michigan where she ultimately earned a Ph.D. with a thesis on the topic of nuclear power and public concerns. Now Mary Sinclair teaches courses at the university dealing with energy and society. She has organized the Saginaw Valley intervenors group to combat some of Dow Chemical's environmental pollution.

Even though she was not a local resident of the Charlevoix area, she took up the case of Big Rock Point as a concerned citizen of the state. Her brief intervention consisted of collecting information on the entire issue of plutonium recycling and requesting the information office of the Atomic Energy Commission for all documentation associated with the authorization of amendment #4. Pertinent materials accumulated by Mrs. Sinclair were widely circulated to influential people throughout the state--to key politicians, to state regulatory agencies, to news media, and, most important, for the future of the case of Big Rock Point, to the Western Michigan Environmental Action Council (WMEAC) in Grand Rapids.

Mary Sinclair, as a concerned citizen, played the critical role in alerting others to the significance of what was contemplated for Big

Rock Point. WMEAC took the cue from Mary Sinclair and led the opposition to the proposed action over the course of three years of intensive struggle in the arena of highly complex and specialized administrative law and regulation governing nuclear power.

WESTERN MICHIGAN ENVIRONMENTAL ACTION COUNCIL

WMEAC, as its name implies, is a group dedicated to protecting the environment in the West Michigan area. It is a council of about 70 affiliated organizations all having environmentally related concerns. A board of 12 elected members chooses the issues which the Council will tackle on the basis of their consideration of the relative significance of issues, time and costs, and prospects of success. During the first six months of WMEAC's intensive involvement in the Big Rock case, the Executive Director of the Council was Joan Wolfe. Mrs. Wolfe was succeeded as Executive Director in August 1973 by Roger Conner, a recent graduate of the University of Michigan Law School Conner had become actively involved in environmental and conservation causes in the course of an academic career marked by many honors. He worked with WMEAC as assistant director during the summer of 1973 before succeeding Mrs. Wolfe.

LOCAL CITIZENS AND CONSUMERS POWER COMPANY

The local citizenry in the Charlevoix and Emmet County area were sufficiently concerned about the imminent change at Big Rock to call for a number of public meetings and debates. Having lived in close proximity to the plant and knowing its employees as neighbors, the people of Charlevoix had come to accept the presence of nuclear power. But some were considerably shaken by the comments of outsiders on the dangers of plutonium and the risks inherent in the reliance on this toxic material as an energy source. Consequently, local groups organized a number of meetings where Consumers Power representatives were asked to address the questions that outsiders were raising as cause for alarm. Sponsors of these meetings included a group of area bankers, the Democratic Women's Committee and the Charlevoix City Council. A host of articles and editorials appeared in the local press.

Consumers Power officials appearing in these meetings were persuasive in making the case for the planned action. They defused much of the opposition on the grounds that the technology under question had already been in use at Big Rock for more than three years, that plutonium is less dangerous than the more volatile uranium 235 and that the possibility of a nuclear explosion was practically nil. CPC spokesmen also pointed to a prospective cost savings on fuel of from 15 to 20 percent, some of which would be passed on to customers.[5] While the utility spokesmen were able to appease the residents of the Big Rock Point plant, the WMEAC Council was continuing to press its campaign for fuller consideration of the issues at stake.

WMEAC's COURT SUIT

The Council's first action in this case was taken on March 5, 1973, in the form of a request to AEC for a public hearing along with a petition to be admitted as a party to the hearing. The Council claimed that amendment #4 had been issued without an environmental impact statement in violation of the National Environmental Protection Act, and that no notice of action was published in the Federal Register as required by the AEC's own regulations.[6] The fact, as noted above, that in this time frame the rules on notification did not technically apply to this amendment could have been construed to weaken the WMEAC case. After demanding a reply in three days and receiving none, WMEAC filed a request on March 9 in Federal District Court for Western Michigan for an injunction against Consumers Power Company's plutonium reloading.

The choice of a legal suit as the vehicle for seeking the Council's goals was based on two major strategic considerations. First, WMEAC wanted to get the issue into the courts to obtain visibility and to avoid the sometimes lengthy procedures which are involved in considering a complaint within the Federal regulatory apparatus. Once a complaint is filed with a Federal agency, there is no recourse to the courts until the agency's final opinion has been delivered. The second reason behind WMEAC's decision to file a suit was the Council's concern that the licensing of the increased plutonium based technology on a wider scale throughout the country. As Roger Conner said later,

> "We saw the individual licensing of Big Rock as part of an on-going program. The AEC had not announced their intent to issue a license, so they foreclosed the option of our asking for a generic hearing. We felt the AEC's goal was to sneak in and foreclose the issue. We had to stop Big Rock

> first. GESMO proceedings would take too long and Big Rock would have already started loading and recycling. The AEC has a definite habit of not reversing decisions."[7]

The Council's action was designed to force broad public debate on the issue of plutonium recycling. While steadfastly maintaining that WMEAC supports safe nuclear power, the Council leadership felt that unless the issue they were raising about Big Rock could be satisfactorily resolved, further national movement in the direction of reliance on plutonium recycle should be halted.

WMEAC employed tactics designed to maximize visibility and the prospects for success in its suit. Council board chairman, John McGarry, appeared on a television interview program on the day of the suit. Press releases were sent to the media. The suit itself was drawn up as an exhaustive discussion of all issues of possible relevance. This tactic of "throwing in everything but the kitchen sink" was calculated to assure the best chance for the suit to be accepted by the court. It also had the effect of impressing everyone who read it with the seriousness of intent and the breadth of knowledge of those who were taking this action. WMEAC had decided, with good reason, that a lawsuit was a better tactic than trying to engage in a communications battle with Consumers Power which was far better heeled and better equipped to engage in a media contest.

U. S. District Court Judge Albert J. Engel, presiding over the court in Grand Rapids which heard the case, denied the WMEAC request for an injunction against the reloading. In his March 16 decision, the judge noted that, Consumers Power Company would not be implementing amendment 4 in its next reloading but would be within the limits of the 1969 amendment #3 which had not been challenged. The utility firm pointed out that, in fact, the next refueling would involve only about 18 kilograms, below the old limit, and that it would take about five years to reach the limits set by amendment #4. Judge Engel noted that his denial of the WMEAC plea for an injunction would maintain the status quo at Big Rock while still permitting the environmentalists to fight the next reloading scheduled for March 1974.[8]

ATOMIC SAFETY AND LICENSING BOARD

During his hearing of the case the Judge was advised by the Atomic Energy Commission that the Commission would hold public hearings on the use of plutonium at Big Rock, giving critics a chance to uncover any safety hazards. On April 10, 1973 the Commission published in the Federal Register a notice of the issuance of license amendment #4 and opportunity for a "de novo" hearing. The AEC also appointed an Atomic Safety and Licensing Board (ASLB) to hear the case. The three board members were Max D. Paglin, Chairman, Dr. Harry Foreman and Frederick J. Shon. On the basis of these new developments, AEC filed a motion to dismiss the WMEAC case of March 9. On May 7, WMEAC resubmitted its petition to intervene in the hearing process. Two private citizens, Karl Waldner and Clare Freer, also filed as individual petitioners.

On July 6, 1973, the Atomic Safety and Licensing Board held a special prehearing conference in Grand Rapids, to consider WMEAC's pending petition for intervention. The following October, after the submission of further pleadings by the petitioner, CPC, and the AEC Staff, the Board issued a memorandum and order granting the Council standing as an intervening party, and allowed the two individual petitioners to make limited appearances if and when a hearing was to be held, since the latter petitions failed to comply with the Commission's rules on intervention as full parties.

A second prehearing conference was held by the ASLB on December 4, 1973, in Michigan to identify key issues in the proceedings, to determine the need for discovery procedures as well as the time required for such procedures, and to establish a schedule for further action in the proceeding. The Board requested the contesting parties to prepare additional briefs on what appeared to be significant legal problems presented by the proceeding. They posed these questions: 1) was the proper safety standard applied by the Regulatory Staff in concluding that all significant hazards had been considered in Big Rock's Safety Analysis Report for amendment #4; 2) in terms of the applicability of NEPA to amendment #4, should the Staff have considered both local and generic issues; and 3) should this particular licensing proceeding be restricted to an examination of safety and environmental impacts at the Big Rock plant or should it encompass questions of a generic nature affecting the use of plutonium recycling operations other than those involving specifically the Big Rock plant.

THREE MAJOR ACTORS AND THEIR ROLES

At this point, about nine months after WMEAC had instituted its initial suit, the Big Rock Point case revolved essentially around the issues raised by WMEAC in March, 1972. WMEAC saw its role as that of a private attorney general intervening on behalf of the public interest in a localized issue with broad implications concerning the future development of nuclear power. But WMEAC had little or no ties to the general public. Indeed, the Council was virtually unknown among citizens of the Charlevoix area whose first doubts about the use of plutonium in their nuclear plant had been largely satisfied by the assurances of Consumer Power Company executives. As in the case of most nuclear plants around the country, local citizens tend to perceive the risks of nuclear power as something they can live with in exchange for the jobs and favorable tax base that are provided. WMEAC's right to intervene rested on the grounds that some of its members lived or traveled in the vicinity of Big Rock and that its members as well as the larger community could be adversely affected by implementation of amendment 4. WMEAC's leaders in fact, decided not to attempt a broad based citizen action program on the grounds that it would be a diversion of their scarce resources and unlikely to take hold.

A question often raised concerning this kind of intervention focuses on why it should be necessary to go outside the established system of government institutions. The Atomic Energy Commission and its successor, NRC, are responsible for regulating the nuclear industry to protect public health and safety. State and county governments have agencies such as health departments and public service commissions whose function is to promote the public interest. Why should the policy decision making process be allowed to become mired in adversary proceedings brought by interest groups with a tenuous claim to representing "the public?" This represents the central issue of Big Rock Point case. But how that issue is perceived depends, of course, on the vantage point of the viewer.

As the case unfolded, the four principal roles continued to be those of the utility firm, Consumers Power Company, WMEAC, the AEC/NRC members and staff, and the licensing board. The state and county agencies, which might have become involved, were essentially by-standers. The technical issues presented by Big Rock were beyond their levels of expertise and financial resources. The Michigan Public Service Commission, like most state utility commissions, concentrates on the economics of utility operations and has little capability or concern in the health and safety issues. The local press in the Charlevoix region operated under similar kinds of constraints. The newspaper lacked the reportorial expertise and the resources needed to cover fully a local story with implications of national significance.

Consumers Power Company executives, far from having second thoughts about the technological course on which they had embarked, have expressed pride in their innovative technology and have consistently maintained that the benefits of their innovations outweighed any risks to public health or safety. The use of a recycled fuel contained plutonium, they argued, would help to conserve scarce supplies of uranium and decrease total fuel costs. Customers would receive the benefit in the form of lower utility rates. CPC executives recognize, in principle, the need for advance public notice of any change in a nuclear utility's basic operations. They understand, expecially in light of the experience gained in this case, the value in forcing opposition to surface early, thereby avoiding the danger of making investments in equipment that will stand idle while a legal battle with interveners is waged. But CPC executive challenged the WMEAC intervention on the grounds that the interests of individual WMEAC members would not be affected nor could WMEAC show grounds for any corporate interest. CPC also felt that certain contentions by WMEAC inappropriately challenged the validity of AEC's rules and regulations, which could not be raised in an individual licensing case, that WMEAC's petition did not comply with the Commission's regulations for intervention, and that it raised generic environmental issues more appropriately treated in a generic rulemaking proceeding.

WMEAC'S REQUEST FOR FINANCIAL ASSISTANCE

On the occasion of the second prehearing conference in December of 1973, WMEAC introduced another issue, namely the need for financial assistance to intervenors. This issue, like the underlying technical issue, has subsequently become part of a broad national question of public policy. In both instances, WMEAC has been part of a broader movement representative of citizen intervention in many parts of the country.

WMEAC's petition for litigation costs describes the organization as a non-profit membership corporation acting as a private attorney general. Its state of financial indigence, together with the need for costly experience in the complex technical issues on which their intervention centered, were the reasons advanced for the claim to assistance. As noted above,WMEAC had not sought to develop a broad base of membership support. WMEAC claimed that, without assistance, it would be unable to represent the public interest with the technical competence and vigor that were required.

GENERIC ENVIRONMENTAL IMPACT STATEMENT ON MIXED-OXIDE FUELS (GESMO)

In early 1974, spurred by the Big Rock proceeding, the AEC gave notice it was going to prepare a GESMO to review the implications of plutonium recycling on an industry-wide basis.[9] The Commission had been considering the initiation of a GESMO for a considerable time, going back to the period before issuing Big Rock Point's amendment 4. In fact, the knowledge that such a broad scale study would be undertaken was undoubtedly considered in the decision to grant the amendment. But the delay of over a year in initiating this study contributed to the skepticism on the part of those concerned about the movement of the nuclear industry into greater reliance on fuels containing plutonium.

Less than two months after the GESMO announcement, AEC's licensing board for Big Rock Point issued an order based on its consideration of the briefs presented by the NRC staff, CPC, and WMEAC.[10] The Board noted that, where there is doubt concerning the degree of "significant hazards considerations" stemming from a license amendment, the intent and history of atomic power litigation encourage the offering of an opportunity for hearing. The "very magnitude and complexity" of the engineering effort on the part of NRC staff and CPC to resolve the question of the significance of the hazards suggests that the hazards may be significant. Although they may ultimately prove minor, the complexity of their analysis would call for hearing from contrasting viewpoints. Since the briefs submitted by the contending parties differed on these issues, the Board called for further oral hearings to compile an evidentiary record.

As for the question whether the hearings on Big Rock Point amendment 4 should be restricted to local environmental and safety impacts or include generic issues being considered in the GESMO, the Board found that in the particular circumstances presented, only local impacts should be considered.

BACK TO THE COURTS

WMEAC, concerned that it was not going to be able to obtain a full and fair hearing through the AEC's administrative law machinery, decided to file another suit against AEC in Federal district court. This initiative was designed to counter AEC's and CPC's "motion to dismiss" the original WMEAC suit of March 9, 1973, on the grounds that issues raised therein had been resolved. WMEAC again asked for funds to cover its litigation costs, including attorney and expert witness fees.

The presiding judge in this case was Wendell Miles. Judge Miles delivered an opinion which has subsequently become the subject of much discussion and controversy. He linked the questions of the GESMO and financial assistance in this passage:

> "the hearing on amendment 4 should not be conducted until GESMO is finalized so that it can be fully considered. We observe that the Commission possesses power to grant fees for costs of participation in its hearing processes, and since the Commission has ordered WMEAC to be prepared to discuss five technical areas, we expect careful consideration by it of plaintiff's anticipated request for fees. In conclusion, we reiterate our desire that AEC give careful consideration to plaintiff's request in view of plaintiff's obvious financial limitations and the need to prevent a 'sham' administrative hearing." [11]

Judge Miles directed WMEAC to the AEC for financial assistance. The AEC took the position, opposed to the Judge's, that it did not have the statutory authority to grant fees for costs and deferred ruling on the request in the light of the then pending Federal legislation. At that point, Congress was debating the very issue of granting such intervenors litigation costs in the process of considering the Energy Reorganization Act of 1974. The section in the Senate bill that would have provided for such costs was defeated in the House-Senate Conference Committee. But the Committee accompanied its report with an explanation to AEC stating; "There is nothing in the Atomic Energy Act, as amended, that would preclude the AEC from reimbursing parties where it deems it necessary."[12] The AEC's response delivered in November, was that WMEAC's request was premature since the issue was of such a generic nature, applying to all proceedings, that it should properly be explored in a rulemaking proceeding. The Commission deferred a decision on WMEAC's request until after the rulemaking.

Meanwhile, another issue was being contested between WMEAC and the ASLB, namely whether or not to continue the hearing process to develop more information on Big Rock Point. The Board wanted to keep on compiling an evidentiary record of local environmental and safety impacts to be in a better position to evaluate them, vis-a-vis a future GESMO. WMEAC, on the other hand, wanted the hearings to be held in abeyance, and so petitioned the Board in mid-August. WMEAC preferred to await GESMO's completion before taking any further steps in the case. In a series of opinions over a period of months, the Board expressed its difficulties in properly construing the intention of both the Court and the Commission as to whether the Big Rock Point case should go forward or await the GESMO proceeding. Finally, in February, 1975, it ordered the case to go forward at least on the local impact issues.

In all this period, WMEAC's leaders felt that the delays on granting any financial aid to them were designed to prevent their participation in the decision on Big Rock Point. In their eyes, the nuclear industry with the support of the government, was poised to begin using recycled plutonium on a large scale. The amendment of the Big Rock Point license to reload with a fuel containing plutonium would be a major milestone on a course towards the reliance on plutonium technology.

Roger Conner, WMEAC's executive director, summed up the situation in a letter to his former mentor at the University of Michigan. He pointed out that, as a result of WMEAC's intervention, AEC was preparing a draft generic environmental impact statement on plutonium recycle and that the ASLB was deciding on the question whether the required administrative hearing in the license amendment should be conducted prior to publication of a final environmental impact statement. Conner said that the next six months to a year would be the critical time for outside intervenors to formulate and present their case against this technological option for the nuclear industry.

As for the techniques to be employed, Conner wrote:

> I cannot emphasize strongly enough the need for full involvement of private attorneys general in the public hearing on the generic EIS, and the need for prior development of the case. And it is also crucial that the intervenors have a full range of procedural rights — including subpoena and cross examination. This is the only way that dissenting views within the AEC itself can be brought out.[13]

When the ASLB, as noted above, finally ordered the hearings to proceed again in February of 1975, WMEAC was still lacking funds to support its intervention. Peter Steketee, principal counsel for the organization, had been contributing his time to this endeavor for over three years, motivated by personal commitment and concern. The need for competent and dedicated legal counsel in pursuing a case through the maze of the administrative justice system is increased by the fragmenting cases into many discrete parts. What began in March '73 as a request to AEC for a hearing on amendment 4 ended up in an involved series of court cases, petitions to the courts and the AEC for financial aid, hearings on a generic environmental statement, and ultimately a court action taken by WMEAC with six other parties on an NRC decision to be described later.

The position of the Commission and of Consumers Power is that the original suits and petitions filed by WMEAC were too broad and general--shopping lists that needed to be broken down into discrete parts. But WMEAC argues that if their case must be pursued through a myriad of separate legal channels, there is all the more reason for providing financial aid to cover the added costs of technical and legal counsel.

As the third year of the case drew to a close in the early part of 1975, there was still no sign of resolution of the issues raised concerning Big Rock Point, interim licensing in the absense of GESMO and aid to the intervenors. The questions continued to be tossed back and forth between the Courts, the Commission and the United States Congress. Recognizing that the proceedings before the licensing board could not provide an ultimate resolution, the newly created Nuclear Regulatory Commission, in one of its early actions, issued an order temporarily suspending the proceedings. Three reasons for the suspension were cited:

1. the need to complete a final generic environmental impact statement on plutonium recycling;
2. the need to establish interim licensing criteria; and
3. the need to determine policy regarding financial assistance to intervenors.

In response, CPC requested the Commission to issue a declaratory order stating whether the originally approved amendment 4 was currently in effect and could be used in the Big Rock reloading scheduled for September 1975. All parties were offered an opportunity to comment on the licensee's petition, and these comments were filed with the Commission.

On May 8, the Commission announced its provisional view that a NEPA cost-benefit analysis of alternative safeguards programs should be completed before the Commission reaches a decision on a wide-scale use of mixed oxide fuels. The Commission proposed guidelines for individual licensing actions related to mixed oxide fuels, effectively limiting such usage to experimental and/or technical feasibility purposes.[14]

Three months later, on August 11, 1975, the Commission issued an order which sought to come to grips with the tangle of questions that had defied resolution thus far.[15] The two main findings were:

1. "NEPA's requirements apply to the use of mixed oxide fuel at Big Rock as authorized by Amendment 4, which requirements can be met fully by a discrete environmental impact statement in lieu of awaiting completion of GESMO; and
2. Amendment No. 4 may not be used until NEPA's requirements have been met and a decision reached in the pending hearing."

In a significant footnote, the Commission pointed up the unique nature of this case and cited the role of the licensing board.

> "Neither matter arises in the context in which we normally exercise our adjudicatory functions, typically including a developed record on relevant issues, with initial and final decisions by a Licensing Board and an Appeal Board. In this

> proceeding, we appointed a Licensing Board which identified the relevant issues and announced a discovery and hearing schedule. We reluctantly impinged on that process when we suspended this proceeding and invited comments on the NEPA issue. Our action has been triggered by the unique circumstances of this case and not by disagreement with any action taken by the Licensing Board."

The NRC order, elaborating on the logic which led to its findings, noted that this order was not foreclosing any of the options available to the Commission in the pending GESMO proceedings. In particular, the Commission was not holding that a core-loading of mixed-oxide fuel, in itself, constitutes a "major federal action" requiring NEPA review. But the circumstances of Big Rock were considered to favor NEPA review in the form of a discrete environmental impact statement. That statement need not discuss alternatives to plutonium recycle and other generic matters properly treated in GESMO.

During the late summer of 1975, WMEAC's lawyer, Peter Steketee, addressed two inquiries to CPC regarding the latter's intent to use an increased mixed oxide fuel content.[16] Judd Bacon, the counsel for CPC, responded that the utility had no plans to exceed the 50 kg limit authorized under amendment 3. Later, in February of 1976, CPC indicated that all uranium fuel would be loaded through the spring of 1977.[17] Meanwhile, executives at CPC were debating whether to go through the involved and costly process of preparing a site-related environmental impact statement or to await the outcome of the NRC's generic GESMO study.

On November 11, 1975, in a switch from its May 5 provisional order limiting commercial use of mixed oxide fuel to experimental and technical feasibility purposes, NRC reversed its position in a decision authorizing a wider, though still limited commercial use of mixed-oxide fuel during the preparation of GESMO.[18] This decision by NRC was premised on the assumption that the toal national capacity for reprocessing nuclear fuel was limited and that no nuclear plant would be able to go very far in the direction of dependence on this kind of fuel. The order specified commitment to usage of mixed-oxide fuel as to dictate the possibility of grandfathering facilities that would later be precluded by the GESMO. No reprocessing facilities were to be built under the authority of this order.

This NRC decision was appealed by a group of six environmental organizations, including WMEAC, and the State of New York in the United States Court of Appeals for the Second Circuit in New York. The decision of that court, dated May 26, 1976, rendered by a three-judge panel designated to hear the case, held in effect, that NRC was in the wrong in permitting any use of mixed-oxide fuel before completion of the GESMO, with the possible exception of small quanities for strictly scientific experimentation.[19]

In early June, NRC filed a brief requesting that the case be heard by the full nine man court en banc. The Court has not yet decided whether to grant NRC's request for rehearing; nevertheless, the environmental groups that filed the suit against the NRC claim that they have won a major contest on a critical policy issue.

PRESENT STATUS

The investigation into the wide-scale use of plutonium mixed with uranium as fuel for reactors, the GESMO, is still under way. In fact, NRC named a hearing board for the proceeding as recently as July 28, 1976. The board composed of 5 individuals renowned in their fields of expertise and who are not part of the NRC personnel, will conduct public hearings on the GESMO after the final version of that statement has been released. A draft of the GESMO was first issued in August 1974. Also to be released in the near future is a supplement to the GESMO analyzing the costs and benefits of alternative safeguard programs. This supplement will ultimately be incorporated in the GESMO.[20]

In June 1976, NRC granted Big Rock Point the first plant life exemption from some of the requirements for emergency core cooling system (ECCS) capability. Whereas NRC normally requires three back up emergency core spray systems, Big Rock was to be allowed to operate with two such systems since its feed water system is available for emergency duty as a third back up. This NRC action sparked a certain amount of concern and opposition among Michigan environmentalists, particularly aggravated by the fact that the NRC's advance notice was published only in the Federal Register which few groups or individuals can pursue thoroughly on a daily basis.[21] WMEAC has regarded this issue as collateral to the cause it is pursuing and has not been actively engaged in this dispute.

A decision on the issue of financial assistance to intervenors has still not been made. In November 1975, Senator Edward Kennedy and several other Senators introduced a bill (S.2715) to promote public participation through financial assistance in Federal agency proceedings. Extensive hearings were held by a Subcommittee of the Senate Judiciary Committee, at which representatives of Government agencies, the Congress, the Judiciary and citizens organizations, including WMEAC, testified in favor of the proposed legislation.[22] The bill has since been reported out favorably by the full Senate Judiciary Committee, and is awaiting floor action by the Senate.

Perhaps the biggest achievement for the forces calling for a more cautions approach to nuclear power development came with the NRC announcement on Friday, August 13, 1976, of a moratorium on licenses for new nuclear power plants.[23] The Commission said that it would not issue licenses to build plants or operate new ones at full power until it has completed the study of possible environmental dangers of reprocessing spent nuclear fuel and the handling of radioactive wastes. It forecast a date of September 30 for study completion.

The Commission announcement followed a July 21 ruling by the U.S. Court of Appeals for the District of Columbia, in a separate law suit by environmentalist groups, stating that the NRC did not give enough attention to those questions in issuing licenses to two plants in Vermont and Michigan. They are the Vermont Yankee Nuclear Power Plant in Vernon, Vermont and Consumers Power Company's station in Midland. A further concession for environmentalists and conservationists was the NRC announcement that, in the case of the Midland plant the licensing board would consider whether energy conservation programs might be an alternative to building a nuclear power plant.

The Big Rock Point Case, as a major contributor to initiation of the GESMO, was likewise a factor in this latest milestone in developing a national policy to govern the critical question of nuclear fuel reprocessing.

THE LESSONS AT BIG ROCK POINT

Roger Conner of WMEAC was one of the several representatives of intervenor groups to testify at the hearings on S.2715. His verbal testimony and the written statement submitted on behalf of the Council provide a vivid account of the difficult mission undertaken by WMEAC. Conner stresses the heavy financial drain leading to $25,000 in debts, the sense of the underdog being pitted against the well-heeled and powerful system linking government and industry, but above all the sense of having been vindicated in the cause which WMEAC has championed.

Conner represents the WMEAC intervention as "sadly typical of environment cases,"[24] in the way that the complex legal system designed to assure justice seems to defy efforts of private intervenors seeking justice. He notes for example, that even though WMEAC has forced AEC or NRC to concede on virtually every substantive or procedural issue that WMEAC has raised, "no experts have been called to testify on the substantive issue that we were trying to get at. There has been no cross examination. The generic environment impact statement is incomplete, but the Atomic Energy Commission and the Nuclear Regulatory Commission has succeeded in exhausting WMEAC's financial resources." [25]

Senator Kennedy asked Conner why he thought that groups such as WMEAC can interpret the Congress' view of its own legislation better than the public agencies established by the Congress. Conner, while disavowing any claim to being always in the right, suggested that where differences of viewpoint exist, they should be resolved in a forum where an objective decisionmaker can decide. He expressed a willingness to abide by such judgments where the combatants have equal status. With such equality and with sufficient record, the chance of producing good outcomes in the end is high.

Lacking such equality in resources, as was the case with WMEAC in the Big Rock Point case, the issues kept being deferred, tangled in the many different strands of regulatory and court procedures which the system prescribed. The energy industry and some government decisionmakers are frequently heard to rail against the delays caused by environmentalist intervention. But, says Conner:

> "Reflect on where the delay came from in our case. It did not come from the effort on the part of us as a group representing the public interest; it came from the agencies as they pushed us around first from court and then to the agency and then to their hearing examiner. How different it would have been had they known that we could have qualified for a grant of attorney fees. We would have gotten to the substantive issue long before now, and less of the taxpayers money would have been spent, with the Atomic Energy Commission sending their lawyer to the western district of Michigan to figure out another reason why we wouldn't get to the issue."[26]

Lesson Number One to emerge from this statement - Financial support to intervenors, as provided by S.2715, would help in bringing substantive issues into sharper focus at an early point in the decision making process.

The Conner testimony refers to the failure of other institutions and agencies to speak for the voice of caution in the question of plutonium recycling. The federal regulatory agency, first the AEC and later the NRC, had been forced by degrees into conceding on the points raised by WMEAC. Despite the Commission's responsibilities to give due regard to public health and safety (42 U.S.C. 2011, 2012, 2013, 2133(d), 2134(d), etc.) and despite the announced policy that important decisions be carried out to the maximum extent practicable with full public participation (42 U.S.C. 2239(a)), the WMEAC contention is that the Commission acted in secrecy. Obviously, Consumers Power with its vested interest in the technology under question only wanted to go ahead. State agencies such as the Department of Health or the attorney general lacked funds. Moreover, as noted above, the issues raised by Big Rock Point were marked by a high degree of technical complexity. It was easier for state and local agencies to opt out on the grounds that the issues raised were tied to generic questions to be resolved at the Federal level.

Lesson Number Two is that the existing system of governmental institutions designed to safeguard the public health and safety and to permit public participation is not working well. The citizen intervenor group serves an essential role as conscience of the system. Remove the conscience and the public interest is left without one of its main guarantors.

But what is the perspective from the other side? Consumers Power executives, needless to say, see the situation in an entirely different light. In their eyes, the challenge presented by WMEAC, far from representing a positive experience in energy related decision making, is a dismal failure. In the words of a lawyer in a firm providing counsel to CPC; "WMEAC was using Big Rock, not because they were concerned with the local plant, but as a sort of handhold to lever themselves up into the national eye." Indeed, no one would deny that WMEAC has attracted much attention at a national level. Yet, strangely enough, the residents in Charlevoix and other communities close to Big Rock Point have only rarely become engaged in the WMEAC cause. Many do not know of WMEAC's existence. Local concern or opposition to CPC's activities at Big Rock Point tends to be scattered and somewhat muted. Whatever opposition to Big Rock exists among local residents tends to be more in the nature of general anti-nuclear sentiment than informed opposition to the developments peculiar to Big Rock.

Although CPC is generally accepted in the local community, the firm has felt compelled to adopt special measures to protect against intrusion by members of the press or private citizens who are critical of the technology being pursued at Big Rock. A reactor engineer at Big Rock Point described the atmosphere surrounding the plant as being that of a police state. The phone number of the plant is no longer listed. Technical and scientific personnel working at the plant tend to clam up rather than openly stating the case for the program and presenting themselves as a target for debate.

To whatever extent the controversy over Big Rock Point may contribute to cutting back on open communications or a wall of distrust separating parts of a community, that development can only be viewed as detrimental to the well-being of the community as a whole. Then the question arises, could the extended debate which gave rise to suspicion and doubt have been avoided? Considering the highly technical nature of the issues and the degree to which national security limits full discussion, could the issue have been resolved more readily and directly?

In the eyes of some nuclear industry representatives, these questions would be preceded by yet another more basic question--was this exercise necessary? To phrase the question another way, is the cost and delay associated with the prolonged debate over greater reliance on mixed oxide fuel commensurate with the consequences for public policy? The greater use of reprocessed fuel afforded the potential of real advantages in the form of conservation of diminishing reserves of scarce uranium and lower costs of electric power generation. The technology has been developed and is being introduced into commercial use with all due care for public health and safety under the system of careful monitoring administered by the Nuclear Regulatory Commission. Should citizen groups be in a position to intervene in the development of a nuclear energy technology to the point of disrupting that development? There is some risk in virtually any course of new energy development. Can we afford to stop development in anticipation of zero risk?

Just to pose the questions is to demonstrate the gulf separating the proponents of nuclear power from the citizen groups challenging its use. If the process of the public debate is to serve a useful purpose it should bring more light than heat into the deliberation. Out of the debate should emerge increasing areas of common ground where people of good faith can come together while perhaps agreeing to disagree on certain points. The trouble with the existing process of decision making and public participation therein is that it discourages meaningful debate or communication about substantive issues. Big Rock Point illustrates nothing more clearly than the way the complex process of administrative procedure inhibits the communication of and debate on questions of substance. The process is caught up in legal battles in which only lawyers are qualified to be combatants. Few laymen have the time, interest and dedication to become involved. Without the legal talents of Roger Conner, Peter Steketee and other attorneys on whom they called, there would probably have been no Big Rock Point case.

Lesson Number Three is that the existing process for decision making, rather than attracting and engaging the public, tends to turn off those who might be trying to keep informed of public policy.

Although the system does discourage full and effective public participation, a legitimate question may be raised concerning the limited extent of the efforts of WMEAC to develop grass roots support. Of course, WMEAC is a council of organizations, some of which have a membership base. WMEAC itself has some 600 members. As noted above, WMEAC had little prospect of winning much of a following among residents living near Big Rock Point. Most of those residents had learned to live with the idea of a nuclear power plant in their midst. They trusted the CPC officials who, after all, were witnessing their belief in the new technology by working at the plant. WMEAC appeared as a group of outsiders - "anti-nukes" - militant do-gooders. There seems to be a common characteristic among residents of all communities in the vicinity of nuclear plants to accept the risks in favor of the benfits. To do otherwise would be to admit that one is not living by one's beliefs. Opposition to nuclear power is strongest where a new site is proposed for a reactor. It is interesting to speculate on how the residents of Charlevoix might vote if Big Rock Point were being proposed for the first time today.

The region embraced by WMEAC covers the entire western half of the lower peninsula, however. Concern for the potential hazards presented by developments at Big Rock extends well beyond the immediate Charlevoix area. WMEAC concentrated its efforts so much on pursuing the Big Rock case through administrative procedures and the courts that little priority was assigned to cultivating grass roots support. Yet such support might have brought much needed funding, as was the case with the groups contesting the North Anna facility in Virginia and the Seabrook plant in New Hampshire. (See case studies on North Anna and Seabrook).

Lesson Number Four is that intervenor groups purporting to defend the public interest should have ties to the grass roots elements of the several publics in the geographic regions where they operate. Without ties to the general public, the claims of intervenor groups to represent "the public interest" can be challenged.

In its 1975 annual report, in a chapter entitled "Responding to Public Concerns," the NRC states that it has made openess and candor with the public a cardinal principle of operation.[27] The chapter details the several ways by which the public is kept informed and given an opportunity to take part in various phases of NRC licensing activity. Included in this chapter is a presentation in simple and straightforward language written for the layman on how the process of participation works, the activities of the licensing boards and the appeals boards, and how the Commission review process works.

A reader of this chapter might gather that the process of decision making on nuclear power involves a well informed citizenry exercising fully its rights of participation as well as rational and well functioning system for reaching decisions. Indeed, there can be no doubt that the Nuclear Regulatory Commission seeks actively to put before the public full information on the nuclear power industry in general and specific licensing activity as well. But providing information to the public on such a controversial set of issues as those presented by nuclear power is a task beset with many difficulties. First, the information itself is complex and technical--to the point where many laymen are unwilling to make the personal effort required to comprehend the issues. Second, the issues take a personal significance when a nuclear plant is proposed in one's backyard. At this point, the safety and health issues become entwined with other concerns such as land values, socio-economic impacts, employment opportunities, etc. Thirdly, the NRC, as the heir of the AEC, has inherited a credibility gap problem.

The task of the Commission in providing a full and objective information service to the public is far more complex than a reader of the annual report might divine. That report gives no hint of the sense of public frustration, of the delays in reconciling the sharp differences between contesting parties, or of public apathy towards a system which many feel powerless to reach. The controversial nature of the problems posed by nuclear power does not emerge.

The chapter details the process of posting notices of Commission activity in the Federal Register and cites the existence of full documentation on all pending cases in more than 100 nuclear facilities. In practice, however, the Federal Register is so voluminous that no private citizen can go through it. Moreover, in the case of Big Rock Point the public documents room has been criticized as a somewhat disorganized center of limited utility to the public. As for the original decision on amendment 4, it was not considered to entail sufficient hazards considerations to merit citation in the Register until after WMEAC pursued its case.

In addition to the Federal Register, many other vehicles are used by the Commission to advise the public, with full advance notice of pending actions of potential concern or interest. The Commission's public information office seeks to keep all media fully informed in advance of pending activities.

A major share of responsibility for keeping the public informed rests with the utility firms and the other sectors of the nuclear power industry. Too frequently, the industrial sector works with the regulatory apparatus to consolidate plans to the point where they are sprung on the public as faits accomplis. One of the reasons why the intervenor groups do not have more of a public following is the sense that decisions have been made before public hearings are held.

The trouble with the existing information system is that it is geared to an ideal world in which citizens are well educated, informed, and motivated to exercise their rights to take part in decisions that affect their lives. The real world is far from this ideal. The practices used to give notice of NRC actions have not yet succeeded in eliminating surprises to the public.

Lesson Number Five is that the process of providing public notice still fails to reach a wide segment of the public with sufficient advance timing to permit full and open discussion. The system needs to be redesigned to reflect realistically public attitudes and motives.

The practice of setting up Atomic Safety and Licensing Boards to hold hearings on the issues involved in construction and operating applications is designed to offer an opportunity for full public participation. As noted above, the Big Rock Point case entailed issues of such significance that the Commission was compelled reluctantly to impinge on the process. The ASLB calls for extraordinary sensitivity to the need for impartiality, balance and avoidance of conflict of interest.

Not many individuals combine the kinds of legal and/or technical competence required to serve on a board with an absence of vested interest.

The ways in which boards operate vary greatly, depending in large part on the style and philosophy of board chairmen and members. Some boards tend to be rather reactive, preferring to wait until the issues come to them rather than exerting force in order to push issues towards resolution. The board for the Big Rock Point case was more of a proactive force, pressing the parties to clarify issues in the pre-hearing conferences, insisting on parties making proper presentations through briefs and memoranda of law on legal issues, and seeking to force substantive issues to a head. The fact that the issues continue to be under review is not a commentary on the board's approach but more of a reflection on the difficulty of reaching decisions on controversial issues in a complicated decision making process.

Lesson Number Six suggests that the ASLB system's effectiveness is highly dependent on the philosophy and style of the individuals appointed to the boards and that care should be taken to avoid appointing individuals who are not prepared to withstand and rise above the considerable pressures of the assignment.

Epilogue

The Big Rock Point case is a key landmark in considering the fundamental questions which this workshop was designed to address. As with any set of experiences, the perceptions of the significance of events will vary according to the vantage point. There is not likely to be a full meeting of minds among differing parties as they view recent history in retrospect. Time constraints have not permitted as full an analysis of the Big Rock Point case as its significance merits. Discussion at the workshop will provide a basis for elaborating and refining this initial effort.

FOOTNOTES

1. The AEC was abolished by the Energy Reorganization Act of 1974, and its statutory responsibility for the licensing of nuclear power facilities was transferred to the newly created Nuclear Regulatory Commission (NRC), effective January 17, 1975.

2. Section 189, Atomic Energy Act, 1954.

3. 37 Federal Register 15131, 1972 and 38 Federal Register 9586, 1973. Presently all actions involving significant hazards are pre-noticed.

4. Dr. Charles Huver, a radiobiologist and ecologist at the University of Minnesota, who had been following nuclear power issues for many years, informed Ms. Sinclair of the Nucleonics Week report and the significance of the pending amendment.

5. "Big Rock Answers Plutonium Fuel Fears at Charlevoix," Petoskey News Review, February 28, 1973.

6. AEC Regulations 10 CFR 2.106 "The [AEC's] Director of Regulations will cause to be published in the Federal Register notice of . . . an amendment of a license . . .whether or not a notice of proposed action had been previously published."

7. Personal interview, June 25, 1976.

8. "Judge OK's Nuclear Plant Refueling." The Grand Rapids Press, March 17, 1973.

9. NRCl-75/3, 161, February 12, 1974.

10. AEC Memorandum and Order, Docket No. 50-155, March 29, 1974.

11. West Michigan Environmental Action Council vs. U.S. Atomic Energy Commission, Federal District Court for Western Michigan, June 19, 1974.

12. Senate-House Conference Committee report on Energy Reorganization Act of 1974.

13. Letter of 24 July, 1976, from Roger Conner to Professor Joseph L. Sax, University of Michigan Law School.

14. 40 Federal Register 20142, May 8, 1975.

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15. NRC Memorandum and Order, Docket No. 50-155, August 11, 1975.

16. Letters of August 11, 1975 and September 2, 1975 from Peter Steketee to Judge Bacon, attorney, Consumers Power Company.

17. Letter from Charles E. Bayless of CPC to WMEAC, February 17, 1976.

18. NRC order, Mixed Oxide Fuel: Scope, Procedure and Schedule for Generic Environmental Impact Statement and Criteria for Interim Licensing Action, November 11, 1975, published in Federal Register (no Docket number).

19. National Resources Defense Council, et. al., vs. U.S. Nuclear Regulatory Commission and the United States of American, U.S. Court of Appeals for the Second Circuit, Docket numbers 75-4276, 75-4278, May 26, 1976.

20. NRC Office of Public Affairs, News Release, August 3, 1976.

21. "Nuclear Foes Fight Big Rock Safety Exemption," Petoskey News Review, June 22, 1976.

22. Hearings before the Subcommittee on Administrative Practice and Procedure of the Committee on the Judiciary, U.S. Senate, 94th Congress. Second Session on S.2715 January 30 and February 6. 1976. Roger Conner's testimony and written statement appear at pp. 27-36.

23. "NRC Declares Halt on Licenses for New A-Plants," The Washington Post, August 14, 1976.

24. Footnote 22, supra, at p.33.

25. Ibid, p.29.

26. Ibid, p.25.

27. U.S. Nuclear Regulatory Commission, Annual Report 1975, p.159.

Appendix A

CHRONOLOGY

Big Rock Point, Michigan

4/18/69	Amendment 3 issued (1969 Amendment) allowing CPC to use 50 kgs Plutonium
12/6/72	AEC grants amendment 4 to Big Rock's operating license. Raises from 50 to 150 kgs the Plutonium contained in PuO_2-UO_2 fuel rods which licensee may receive, possess and use in connection with operation of reactor
3/5/73	WMEAC requests the AEC for a hearing, on the issuance of amendment 4 and petitions to be admitted as a party at the hearing. Demands AEC and CPC comply with NEPA and calls on AEC not to permit refueling or plant operations to proceed until AEC and CPC comply with NEPA. Requests reply by 3/8/73
3/9/73	Request for injunction filed in Federal District Court of western District of Michigan. Injunction denied 3/17/73
4/6/73	AEC issues notice of Facility License Amendment 4 and opportunity for hearing
5/7/73	WMEAC submits petition for leave to intervene and requests hearing
5/4/73	AEC files motion to dismiss case of 3/ 9 /73
7/6/73	Special prehearing conference held in Grand Rapids, MI
10/26/73	ASLB allows Waldner and Freer to make limited appearances at hearing in answer to their petitions of May 9 and May 17
12/4/73	Second prehearing conference
2/12/74	AEC issues notice it is going to prepare GESMO
3/29/74	Board rules out generic issues, states scope of hearing should only be environmental and safety impacts in vicinity of plant

6/19/74	Judge Miles opinion on WMEAC v AEC; request for financial assistance, i.e. attorney's and expert witness fees
7/18/74	Third prehearing conference
8/2/74	WMEAC's petition for financial aid filed with AEC
8/6/74	AEC addresses WMEAC's petition for financial assistance
8/7/74	Board Order to continue hearing to point of compiling evidentiary record on local safety and environmental issues to be in a better position to evaluate them vis-a-vis an eventual generic rulemaking proceeding
8/16/74	WMEAC's motion for reconsideration of ASLB's order of 8/7/74 to continue proceedings
8/30/74	Order to Secretary of AEC deferring action on WMEAC's financial assistance petitions until completion pending Congressional consideration of S2715
11/1/74	Board agrees to hold discovery in abeyance until 20 days after AEC rules on WMEAC's petition for financial aid
11/20/74	AEC's decision on WMEAC's petition for financial assistance states these questions should be explored in rulemaking proceedings under NRC and defers ruling on WMEAC matter until after completion of rulemaking
11/29/74	WMEAC's petition for continued abeyance of discovery
2/19/75	Board orders hearing to proceed - WMEAC returns to Judge Miles with a renewed motion for aid
3/11/75	Board orders discovery schedule held in abeyance until ten days after Judge Miles opinion on renewed motion for aid
3/19/75	NRC suspends proceeding until further order. Any party may furnish NRC with views as to whether NEPA would be satisfied by a discrete EIS on Big Rock alone, in lieu of GESMO
5/8/75	NRC defers future licensing actions, related to the wide scale use of mixed-oxide fuels, until the completion of GESMO

11/8/75	NRC memorandum and order finds NEPA's requirements apply to amendment #4 and that requirements can be met by a discrete EIS and that amendment #4 may not be used until NEPA requirements have been met and a decision reached in pending hearing
11/11/75	NRC reverses earlier opinion of 5/8/75
5/26/75	Six environmental groups and the State of New York appeal NRC's decision of 11/11/75 on interim licensing. Judge's opinion states NRC must refrain from granting unlimited commercial licenses until after hearing on GESMO completed

BIOGRAPHICAL SKETCHES

Erasmus H. Kloman is a Senior Research Associate of the National Academy of Public Administration and Executive Secretary of the Academy's Standing Committee on Environmental and Research Management. He has served as project director for several studies on energy related topics undertaken by the Academy for Federal agencies including the National Science Foundation, Federal Energy Administration, Energy Research and Development Administration, and the Congressional Research Service of the Library of Congress. He is the author of a number of articles and mongraphs dealing with public participation in areas of science and technology policy. In his capacity as Secretary of the Academy panel for this workshop, Dr. Kloman has coordinated the preparation of the case studies and other aspects of the panel's efforts.

Before joining the Academy staff, Dr. Kloman served in the Federal government, in academia, and in industry. His background is in political science and economics with an undergraduate degree from Princeton, MA from Harvard, and Ph. D. from the University of Pennsylvania. He is an Associate Professiorial Lecturer in Business Administration at George Washington University.

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Joan Schumaker is a senior in the School of Natural Resources at the University of Michigan. Her summer in Washington was sponsored by the University of Michigan's Washington Intern Program. She worked closely with the Federal Energy Administration's Office of Consumer Affairs/Special Impact while researching her case study subject. The case study included a week in Michigan conducting personal interviews with some of the actors, along with numerous phone interviews and personal interviews with appropriate actors in Washington.

Past relevant work experience includes lobbyist and student coordinator for PIRGIM (Public Interest Research Group in Michigan) working on special projects: legislation banning non-returnable bottles and to regulate transportation of nuclear wastes. She also designed a course entitled "Environmental Problems of the Northern U. S. Rockies" along with an intern program to place interested students in environmental organization in that area.

NORTH ANNA

NORTH ANNA
PREPARED BY
JULIA MC CABE

ABSTRACT

Generally speaking, this case study is concerned with the construction licenses for a four-unit nuclear plant located on the North Anna River in central Virginia. In late 1973 construction license records for Units 1 and 2 of the North Anna Power Station were reopened in order to evaluate the impact of a recently publicized fault lying under the plant. A local citizens' group, the North Anna Environmental Coalition, was responsible for bringing the fault to the public's attention and was involved in the two proceedings that ensued. The first proceeding dealt with the safety aspects of the fault, and the second with possible violations of the reporting requirements of the Atomic Energy Act, as amended in 1954, made in connection with the fault.

The case study begins with a narrative chronology of events. Emphasis is placed on the participation of members of the public in the AEC/NRC proceedings. Participation in this study is defined as: (1) correspondence in agency docket files, and (2) limited appearances and interventions in adjudicatory hearings.

The remainder of the paper focuses on the problems and implications of public participation in agency proceedings. The discussion considers the ill-equiped nature of the citizens' group which

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intervened and its adaptation to the intervention; the motivating factors for public intervention, for example, representation of the public interest and public perceptions of the agency roles; the technical nature of the fault proceeding which raises questions about the learning capabilities of the general public; and finally, the credibility gaps created during the agency proceedings.

This case study does not offer solutions to agency/industry/ public relationships, but it does provide a starting point for discussion of the fundamental issues of energy decision-making.

NORTH ANNA
PREPARED BY
JULIA MC CABE*

On March 21, 1969, the Virginia Electric and Power Company (VEPCO) applied to the Atomic Energy Commission (AEC) for authorization to construct and operate two nuclear reactors on a company site on the North Anna River near Mineral, Virginia.[1] Mineral is a town of fewer than 1,000 inhabitants in the central part of Virginia, about 30 miles from Charlottesville to the west and about 24 miles from Fredericksburg to the northeast and Richmond to the southeast. (See map, Appendix B.)

During the required public hearing on the application for construction permits for North Anna units 1 and 2, held in November, 1970, some local landowners appeared as intervenors. They were concerned about the fact that their land would be close to ponds where water from the plant would be cooled and requested that VEPCO provide positive assurance that the North Anna project would not endanger their lives, health, or welfare. Such assurance was given, and on February 19, 1971, the AEC issued construction permits for units 1 and 2. Seven months later VEPCO filed an application to build two more reactors at the site.

As construction work moved along on units 1 and 2 during 1972,

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*Smith College

Mrs. Margaret Dietrich, an active elderly woman who had been studying nuclear energy and its problems since 1971, made several attempts to get together a group of local residents concerned about the four-reactor plant at North Anna. It was not until January 1973 that she was successful. Early that month about a dozen local people met at Mrs. Dietrich's home in Gordonsville, about 20 miles west of Mineral, to discuss the possible dangers of nuclear power plants generally and the North Anna plant specifically. At a second meeting on January 22, the North Anna Environmental Coalition (NAEC) was formed. Annual dues of $2 were established, and the group began to lay plans to "educate the public" about nuclear power plants. The coalition hoped ultimately to arouse enough opposition to halt work at North Anna.[2]

Of the dozen or so members, three would be particularly instrumental in carrying on the group's work in the ensuing months. They were the president, William Warren, of Charlottesville; Mrs. Dietrich, the secretary; and Mrs. June Allen, the treasurer. Together, they comprised the group's executive board. In a later Washington Post article, reporter Hal Willard described Mrs. Allen as NAEC's "driving force." A language consultant, Mrs. Allen had graduated from the University of Vermont, where she was elected to Phi Beta Kappa. She had also earned a master's degree from the University of Arizona.

While the citizens' coalition was getting underway early in 1973, excavations for North Anna's units 3 and 4 were being dug. During these excavations (which can be carried out before a utility has obtained a construction permit for a nuclear plant) rock displacements were observed, and in April VEPCO began a study of the geological fault that the digging had uncovered. A fault is a break in a formerly continuous mass of rock, with dislocation along the plane of the fracture. In other words, it indicates past instability in the rock beneath the ground's surface and may presage future underground changes

During a hearing held from May 7 to May 10, 1973, before an AEC Atomic Safety and Licensing Board (ASLB) on VEPCO's application for a construction permit for units 3 and 4, no mention was made of possible geological problems. But on May 17 VEPCO notified the AEC that a fault existed beneath the site. The AEC Regulatory Staff began a review, and at the end of July an AEC staff geologist, A. T. Cardone, submitted an affidavit stating that safety questions raised by the fault would have to await the completion of VEPCO's study in the middle of August. On August 3 the Regulatory Staff finally informed the Safety and Licensing Board which had conducted the hearing that a full geological investigation might be necessary.

Meanwhile, the citizens' coalition had been attempting to determine whether a fault existed. The suspicions of NAEC members had been aroused during a question-and-answer session following the showing of an anti-nuclear film in a local auditorium on May 29. One of the persons in the audience, a construction worker at North Anna, reported that "drilling through rock and hitting clay" had occurred at the site. His question was whether this indicated that the site was a bad place for a nuclear power plant in the event of an earthquake. Later, on

July 25, AEC Regulatory Staff counsel David Kartalia acknowledged, in a telephone conversation with an NAEC representative, that there was in fact a fault beneath the North Anna installation.[3] On August 4 the NAEC sent out a press release to the news media detailing the geological problem at North Anna.

NAEC MOVES TO HALT CONSTRUCTION

As a result of the news release, NAEC soon heard from John Funkhouser, a professor of geology at John Tyler Community College near Richmond. Funkhouser (who was tragically murdered in his apartment in 1974) told NAEC that he had observed the fault during a trip to the North Anna site in February, 1970, when excavations for units 1 and 2 were being carried out. At that time, Funkhouser said, he had mentioned the existence of the fault to VEPCO's resident engineer at North Anna. On a subsequent trip Funkhouser had taken along two professional colleagues, who also confirmed existence of the fault.

With this evidence in hand, NAEC then formally asked the chairman of the Safety and Licensing Board to reopen the record of the construction licensing proceeding for units 3 and 4 and convene a public hearing in Louisa (a few miles from Mineral) to consider new facts. These included the existence of the fault, the dates of its discovery by independent geologists, VEPCO and AEC, and the relationship of the fault to known Virginia earthquake zones. The coalition was worried about the possible implication of this geological problem, which had been kept out of sight during the licensing proceedings.

The Safety and Licensing Board then asked VEPCO and the AEC

Regulatory Staff for "views on an appropriate mode of dealing with the question" of the Cardone affidavit. In effect, the Board was asking if further investigation of the fault was necessary. The reply to the Board's inquiry was that the Regulatory Staff was reviewing the VEPCO report, which had been prepared by the consulting firm of Dames and Moore and submitted by the company to the Staff on August 17.

To the NAEC executive board, that hardly looked like the right way to go about it, and on September 5 the citizens' coalition formally asked the Regulatory Staff to take additional steps. NAEC asked for an assessment of potential problems at North Anna by disinterested scientific experts, and raised the question of whether the water impounded by the dam built by VEPCO across the river might increase subterranean earth movements. NAEC wanted to know if VEPCO or the AEC intended to monitor the area with seismographs, instruments used to detect earth movements and earthquakes.

Less than a week later the coalition formally asked the AEC to revoke the construction permits already issued for units 1 and 2 and cited "material false statements" as the reason for their request. NAEC also asked that construction permits for units 3 and 4, not yet issued, be permanently withheld.

HELP SOUGHT FROM THE STATE

As the concern of the citizen's coalition over the problems at North Anna increased, the NAEC executive board began the time-consuming process of determining which state agencies had regulatory responsibilities over nuclear power plants and whether they could be helpful.[4]

To the NAEC one of the most likely prospects was the state's Water Control Board.

One of the Water Control Board's jobs is to determine whether to issue a so-called "401 Certificate" to electric utilities after monitoring discharges of cooling water from nuclear power plants. A 401 Certificate states that discharged cooling water complies with Virginia's water quality standards. In the case of the North Anna installation the certificate was necessary before the AEC could issue a construction license permit for units 3 and 4. The certificate was also required as part of the record in the so-called "Section B" hearings devoted to determining whether the plant would have any adverse environmental effects.

In August, NAEC asked the Water Control Board to delay issuance of a 401 Certificate, contending that the fault might lead to damage of the reactors at North Anna, and that damage might result in the leaking of radioactive material into the groundwater. On August 29, however, the Water Control Board's executive secretary informed NAEC that 401 Certificates dealt only with the discharge of heated cooling water from nuclear power plants, and that the Board had voted to issue the certificate, thus permitting operation of units 1 and 2 and the beginning of construction on units 3 and 4. Whether a certificate would be issued for operation of units 3 and 4 would depend on the temperature of discharged cooling water from the plant, which would be monitored by the Board. The Water Control Board's unwillingness to deal with the question of possible groundwater contamination was reinforced by the state Attorney General's view that "site characteristics of the VEPCO North Anna Power Station are inexorably linked to reactor safety and therefore are totally within the purview of the AEC."

NAEC also sent letters to the governor, the state Attorney General, the state Air Pollution Control Board, the state Department of Health, the state Department of Emergency Services, and the State Corporation Commission, which has the task of issuing certificates of convenience and necessity for new utility power plants. In some of their letters NAEC asked these officials and agencies "to bring their resources and abilities to bear on the national and perhaps unique problem being faced at the North Anna site."

None of the state agencies offered to help in the case, and in some cases their responses were extremely late. The governor's office never replied. Attorney General Andrew W. Miller said that he wanted to see the findings of State Geologist James Calver before taking any action on the coalition's request for support in gaining a reopening of the record on the hearings for the construction permits.

NAEC did have somewhat more success with contacting members of the Virginia General Assembly. Late in August both State Senator John Dalton and State Delegate Thomas Michie asked the AEC to reopen the hearings.

THE "SHOW CAUSE" PROCEEDING DEVELOPS

NAEC efforts to gain additional support continued through September and October, and on October 17, 1973, the AEC Director of Regulation ordered VEPCO to show cause why further construction on units 1 and 2 should not be suspended, pending completion of the AEC's own geological investigation. At the same time, the AEC Regulatory Staff filed a motion for further hearings on the construction license for units 3 and 4. Neither the Director of Regulation nor the Staff mentioned the possibility of dealing with the "material false statements" alleged by NAEC, and on October 22 the coalition registered its formal objections to this omission.

On November 6, in response to the show cause order, VEPCO asked for a hearing that would be limited solely to questions of safety that might arise due to the existence of the fault. VEPCO also urged consolidation of the show cause hearing with any further hearings on the construction permit for units 3 and 4. These requests were granted by the AEC; an Atomic Safety and Licensing Board was assigned to the case.

The first notice of the hearing was published on December 27 in the Federal Register. This annoyed the NAEC, which pointed out that few citizens of central Virginia have ever heard of the Federal Register, let alone read it. At the very least, NAEC argued, the law should have required newspaper notices of the hearing in such relatively close communities as Charlottesville, Richmond, and Fredericksburg. The coalition then contacted Rep. J. Kenneth Robinson of Virginia's 7th District, who sent a telegram asking the ASLB Chairman, John B. Farmakides, to extend the January 16 deadline for notification from citizens wishing to speak at the hearing. The extension was granted, and NAEC issued a press release to the news media about the upcoming hearing.[5]

NAEC ENTERS THE SHOW CAUSE PROCEEDING

The citizens' coalition did not wish to intervene in the show cause proceeding. Having sought help from other public interest groups around the country, Mrs. Allen said, she found that they "felt that their experience had been that citizens in attempting to mount an effort of this sort serve primarily to impoverish themselves financially and do not gain."[6]

Yet when NAEC considered the positions of the other parties involved it did not appear that any of them were terribly concerned about the matter of North Anna's safety--at least nowhere as concerned as NAEC.

Under the circumstances NAEC reluctantly decided it had no choice but to become an intervenor, and it filed its petition for leave to intervene on January 26, 1974. The petition, signed by June Allen, was accompanied by an affidavit in which NAEC makes eleven contentions, such as:

> "that the fault is not designed to withstand fault movement directly under the plant, that VEPCO has made material false statements to the AEC regarding the faulting and is thus unfit to operate the nuclear power station and so on."

THE PREHEARING

All the parties involved in various North Anna proceedings met for a prehearing conference in Fredericksburg on February 11, 1974. At that time the ASLB consolidated all the North Anna proceedings, including those involving environmental review and those involving issuance of operating licenses for units 1 and 2.

At the prehearing both the Commonwealth of Virginia and NAEC raised the issue of whether material false statements had taken place in connection with the discovery of the fault at North Anna by VEPCO. About two weeks later all the parties agreed to handle the contested issue this way: the AEC would complete an investigation of this so-called "disclosure issue" and notify NAEC in writing of its findings. The coalition, within days thereafter, would be permitted to file a request for a separate hearing on the issue if it wished. Thus, the disclosure issue was temporarily set to one side in order to resolve first the safety questions that had been raised by the fault at North Anna.

The issues discussed at the show cause hearing included:

> "1) whether investigation of the fault zone at the North Anna Power Station site and the data obtained therefrom provide reasonable assurance that North Anna Units 1 and 2 can be constructed and operated at the site without endangering the health and safety of the public and that North Anna Units 3 and 4 can be constructed and operated at the site without undue risk to the health and safety of the public.
> 2) whether the issuance of operating licenses for Units 3 and 4 will be inimical to the health and safety of the public."

They also included these subsidiary issues:

> "1) whether the investigation of the fault zone has satisfied the regulations of Appendix A to 10 CFR Part 100.
> 2) whether, based on the results of such investigation, the faults in the fault zone at the North Anna Power Station site are "capable" within the meaning of Section III (g) of Appendix A to 10 CFR Part 100.

> 3) whether, based on the results of such investigation, the effects of Lake Anna on the fault zone at the North Anna Power Station site have been adequately assessed.
> 4) whether, in the light of the existence of the fault zone at the North Anna Power Station site, the earthquake assumption used in the design of North Anna Units] and 2 are adequate.
> 5) whether, based on the results of such investigation, the existence of the fault zone at the North Anna Power Station site significantly increases the extent to which Lake Anna or local groundwater might be contaminated in the event of accidental spill of radioactive liquid waste."

The issues and parties having been established, the dates for the show cause hearing were set. Discovery of evidence proceeded.*

LIMITED APPEARANCES

The hearing began on March 20, 1974. Limited appearances were made by twenty-five persons on March 21 and by two persons on March 22. "A person permitted to make a limited appearance, may state his position and raise questions which he would like to have answered to the extent that they are relevant to the matter at hand."

Most of those who made limited appearances were members of the coalition, which by now consisted of about one hundred members. Although a few of the members were scattered around the state, most resided in Louisa, Gordonsville or Charlottesville. A membership file indicates that most of these were in the middle to upper-middle class range socioeconomically. Occupations listed in the file included teachers, students, retired people, professional people and housewives.[7]

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*AEC Rules of Practice permit parties to an adjudicatory hearing to obtain discovery of evidence by means of written or oral depositions, by written interrogatories, through production of documents or things or permission to enter upon land or other property, and by requests for admission.

The matters raised by those who made limited appearances included the operation of the hot water cooling lagoons, safety design, quake predictability, groundwater contamination, general technological problems of nuclear energy, integrity of the power industry, and so on. All displayed some sort of scientific knowledge, and few came prepared with statistics. [8]

Several local officials also made limited appearances. These officials, such as the mayor of Louisa and a member of the Louisa County Board of Supervisors, emphasized in their statements that provided the danger to Louisa citizens was disproved they would continue to support the construction of the North Anna Power Station. The chairman of the Louisa County Planning Commission urged continued construction of the plant because of its economic importance to the area. He did not dwell on the possible dangers associated with the fault.

TESTIMONY, EVIDENCE, AND ORAL ARGUMENT

When the limited appearances ended, VEPCO, the AEC Staff Counsel, the Commonwealth of Virginia, and NAEC began their presentations. The coalition was represented by a lawyer who had offered his services to the group free just before the hearing. William Rodgers, a professor at Georgetown Law School in Washington, joined NAEC "because he felt that something was wrong with the system when the only group actively going to bat for the public health and safety was a small group of citizens."[9]

At the hearing, the coalition challenged the AEC's siting regulations as being arbitrarily based on what they said was the non-geologic concept of "capability." Commission standards forbid locating plants on or near capable faults. The coalition also argued that the weight of the evidence had to be sufficient to establish beyond reasonable doubt that the health and safety of the public was adequately protected.

Although the coalition had obtained some information earlier through written interrogatories, Rodgers also sought further material at the hearing, filing a motion on the first day to compel production of AEC records. During the hearing, NAEC was allowed a closer look at the reports on North Anna prepared by the AEC's Advisory Committee on Reactor Safeguards (ACRS).* One of the most significant discoveries occurred on March 23 when an NAEC investigator found a significant geologist's report in the files of a Dames and Moore office in New Jersey. The report later on became a material false statement in the disclosure case.

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*The ACRS had originally sent several documents to the coalition containing virtually nothing but a greeting and salutation with everything else censored. The coalition wanted all evidence relating to the fault made public.

Besides presenting written evidence, NAEC also provided technical witnesses. The independent geologists who testified were volunteers whose transportation costs were paid by NAEC. The funds were extremely limited. The dues of NAEC members, raised from $2 to $3 in 1974, primarily were used for printing and mailing costs.

During the hearing VEPCO Counsel Michael Maupin supported the company's contention that the location met AEC siting standards (10 CFR Part 100, Appendix A) and was therefore by definition safe. Support for the company's position was provided by the testimony of a battery of renowned geological experts. The AEC Regulatory Staff concurred that the location met AEC siting standards. The company also received de facto support from the Commonwealth of Virginia.

After extended cross-examination of the technical witnesses by all parties, the hearing came to a close on April 4, 1974.

ASLB DECISION

The ASLB rendered its initial decision on June 27. The Board held that there was reasonable assurance that the geologic fault was not a "capable" one, and that creation of Lake Anna did not threaten to reactivate the fault. It also ruled that the seismic design of the plant was adequate and that further construction activities on units 1 and 2 need not be suspended. Finally, the fault was said to have no bearing on whether to permit construction of units 3 and 4. On July 18 the ASLB authorized issuance of construction permits for units 3 and 4.

NAEC chose to file an exception on June 27. Its appeal was fully briefed and argued before the Atomic Safety and Licensing Appeal Board

(ASLAB). The appeal was denied on January 27, 1975. In March, 1976 the U. S. Court of Appeals affirmed the ASLAB decision. The Appeals Court verdict, NAEC said, exhibited no recognition of a possible safety problem and was largely a "hymn of praise" to the Nuclear Regulatory Commission and VEPCO.*[10] A rehearing was denied.

DEVELOPMENT OF THE DISCLOSURE PROCEEDING

Meanwhile, on March 25, 1974, the AEC Staff had issued its report on the alleged material false statements, concluding that there had been no violations of the Commission regulations. Soon after receiving the report, NAEC petitioned for a hearing on the disclosure issue. A spokesman for NAEC claimed that the body of the report contained numerous depositions collected by AEC investigators which showed a wholly opposite conclusion.[11]

On May 28 the Commission granted the request for a public hearing on the question of whether construction permits for North Anna units 1 and 2 should be suspended or revoked. The ASLB that had served in the show cause proceeding was designated to hold the hearing and take whatever action it deemed necessary to appropriately establish the specific issues.

This was the first occasion in which the holder of a nuclear license had been charged with having made material false statements in connection with a licensing application.

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*The Nuclear Regulatory Commission (NRC) assumed the regulatory functions of the AEC on January 20, 1975.

PREHEARING AND DISCOVERY

The prehearing conference was held on July 23. The parties to the proceeding (NAEC, the Commonwealth, the AEC Staff, and VEPCO) presented the Board with a proposed stipulation of issues, which was subsequently executed by the parties and approved by the Board in its Prehearing Conference Order of August 1. Appended to the stipulation was the coalition's specification of alleged material false statements. This specification was further developed and refined by the coalition in an October 22 filing. With respect to each identified statement, the coalition detailed the foundation upon which the claim of falsity rested.

NAEC initially alleged twenty-four material false statements, but by the time of stipulation, the number had been reduced to nineteen for the purposes of the inquiry. All related to VEPCO's failure to report to the AEC in a timely fashion what it knew about the fault. One example is the statement in VEPCO's Final Safety Analysis Report for units 1 and 2 that "faulting of rock at this site is neither known nor is it suspected." VEPCO issued this report on April 30, 1973, about a week after the utility company had begun a fault study.

It was agreed that the disclosure proceeding would be conducted in two phases. The first phase would be limited to the question of the presence or absence of material false statements. The second phase, which would arise only if alleged material false statements were in fact found to be present, would consider remedies and sanctions. It was further agreed that an initial decision would not be issued until after the conclusion of the second phase.

Certain scheduling and discovery matters were also settled at the prehearing conference, although the agreed-on schedule was later modified by the Board's orders of September 24, October 10, and November 4, 1974.

After the July 24 prehearing conference the parties proceeded with discovery, exchanging interrogatories and other documents.

Another prehearing conference was held on January 22, 1975. At that time the principal issue was discussed--whether VEPCO had submitted material false statements within the meaning of 42 U.S.C. 2236 in its application for construction permits for units 1, 2, 3, and 4 at the North Anna Power Station. To answer this question the Board would have to interpret the legal meaning of each of the words contained in the phrase "material false statement."

Prior to the evidentiary hearing all parties filed trial briefs setting forth their respective positions, and the public hearing was held on January 29-30, 1975. No limited appearances were made. (Notice of the hearing had been published on October 25, 1974, in the Federal Register. No other parties chose to petition for leave to intervene.)

DISCLOSURE PROCEEDING

The question of culpability was determined by the Board on an extensive stipulation of fact, numerous exhibits, and some testimony. During the hearing the AEC Staff attempted to prove that VEPCO had made ten material false statements. The Commonwealth argued twelve, NAEC nineteen. VEPCO strove to show that it had not knowingly made any misleading or false statements at any time.

On April 4, 1975, the Board issued an interlocutory order in which it ruled that twelve material false statements had been proved. Significantly, VEPCO was held accountable for the knowledge of its employees, and remaining silent on a "key issue" was considered a false statement. The NRC ruling was termed a "landmark decision" by Mrs. Allen, spokesman for NAEC.[12]

The penalty hearing was held on May 28. The Board heard argument on what would constitute appropriate remedies and sanctions, including Commission monitoring of VEPCO quality control efforts, placing VEPCO under a continuing disclosure requirement on matters related to geologic suitability of plant site, a fine of $705,000, and others.

The NRC Staff recommendation called for a $60,000 fine to be levied against VEPCO--the maximum $5,000 on each of the twelve counts.

VEPCO argued that the ASLB did not have the authority to modify or to fashion affirmative order imposing novel conditions. VEPCO said the Board could only revoke or suspend permits or issue a notice of violation to the company.

During the penalty hearing it was disclosed that VEPCO had withheld not only the first report by Piedmont geology authority Dr. Paul Roper but also a second report citing further indications of a fault at the North Anna site. It was also revealed that a pumphouse at North Anna had shown excessive settling in December, 1972, a fact not reported by VEPCO to the NRC until April 16, 1975.

In a letter of June 17 to Wallace H. Johnson, Assistant Attorney General for the Land and Natural Resources Division, Mrs. Allen asked the Justice Department to assume responsibilities for criminal prosecution in the VEPCO case and said "if the AEC/NRC were truly vigilant about utility integrity, the recent conviction of VEPCO for having submitted twelve material false statements to the AEC between 1970 and 1973 would have come as a result of Commission action instead of citizen action."[13]

An initial decision on the penalty was handed down by the ASLB on September 10, 1975. The ASLB imposed on VEPCO the most severe penalties the company has ever received as an owner of nuclear power plants.* The penalties included a $60,000 fine and a three-part order requiring certain actions by VEPCO to prevent recurrences such as:

> "-preparing a statement of policy for approval by NRC and issuance by VEPCO expressing VEPCO's strong commitment to discharge fully all of its responsibilities in connection with its construction activities, including its duty to submit to NRC for independent evaluation all "material safety matters."
> -preparing a management evaluation and analysis of its current organizational structure, assessing its own ability to implement the required statement of policy.
> -analyzing and reporting on its contract policy with contractors performing any work for VEPCO relating to its license applications to the Commission."

The ASLB refused to revoke or suspend the construction permits and cited three factors: the fault was not active and therefore posed no risk to public health and safety, the power to be generated by the completed units will be needed by the public, and there was no finding of "concerted, deliberate intention to violate the material false statement provisions of the Act."

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*VEPCO had received two civil penalties prior to this decision.

The decision of the Board disposed of a number of legal issues, such as:

> Material False Statement
>
> "The meaning of the phrase material false statement is defined by the ordinary meaning of each of the words used therein, read in light of the clear mandate of Congress to protect public health and safety.
>
> Section 186 contemplates that a material false statement results if, in light of all circumstances, an applicant fails to make a timely disclosure of information which is important for purposes of the safety review of its submission.
>
> The materiality of a false statement should be judged in terms of impact of such a statement upon an expert but not upon an average citizen.
>
> Duties of Applicant
>
> In order for the applicant and the Commission to discharge their respective duties and obligations with respect to public health and safety, documents submitted in support of an application must adhere to the highest standards of accuracy.
>
> Board Jurisdiction
>
> Where the Commission designates an ASLB to assume jurisdiction over a proceeding, and delegates to the Board the power to revoke outstanding construction permit, the Board necessarily has been granted all pertinent authority which the Commission would have exercised."[14]

The decision was by a two-to-one vote, with Board member Lester Kornblith, Jr. saying he found only four false statements but would have boosted the fine to $90,000. "I find the failure to report the suspected fault at a hearing (before the Board) May 7, 1973, to be the most serious materially false statement." For that, he said, "VEPCO should be fined the maximum $25,000 a month for the three months that passed before company officials finally acknowledged the suspected fault...the other three statements would carry the $5,000 fine."

REACTION TO DECISION

There was no doubt that the ruling was a significant one. William Massar, a lawyer for the NRC Staff, said the decision meant utilities would be more careful in what they say or don't say in applying for a license permit in the future.[15] VEPCO was disappointed by the ruling and decided that in view of its far-reaching legal implications the company would appeal. The coalition also noted an appeal from the ASLB's decision.

The Atomic Safety and Licensing Appeal Board heard oral argument and reviewed briefs. On April 15, 1976, it ruled to "affirm in part, modify in part and reverse in part" the lower Board's verdict.

The Appeal Board reduced the number of material false statements to four and the amount of fine to $17,000. Two affirmative action sanctions were eliminated and the third was modified.

Legal differences between ASLB and ASLAB decisions that were important included: 1) A statement is an affirmative word and applies to written and oral statements. An omission, the failure to report information, is not a statement. 2) In order to determine whether or not a reporting requirement had been violated, it is necessary to decide first if the source of the reporting requirement was valid (the company had to consider it when reporting information) at the time of the violation.

The decision was again a majority one. Appeal Board member John W. Buck dissented in part. It was his strong opinion that "this case would never have arisen if the Commission regulations and guidelines for reporting geologic and seismic studies had been properly written and administered." Further, he felt that "VEPCO with its contractors made adequate investigation of the North Anna site geology, and they made every effort to meet what they sincerely believed to the intent of the Commission regulations in this area."

Buck seems to feel that the NRC staff is wrong to demand punishment of VEPCO for withholding information of the fault during the May 7-10, 1973 construction permit hearings for units 3 and 4. VEPCO informed the AEC staff on May 17. The AEC staff "conscientiously and deliberately withheld the same information from the ASLB and the public from May 17 through August 3. On the 3rd, the ASLB was made aware of the fault by the AEC staff.

The AEC staff's excuse for the reporting delay is very similar to VEPCO's. The AEC staff waited because it was investigating the geology of the site. This completely ignored the fact that the ASLB was preparing its initial decision.

To Buck, "it would appear that the same excuse should apply to the licensee (VEPCO) since it too was continuing its investigation.

Finally, Buck summarizes it all in his "Regulatory Rumba" thus: it is the staff which has missed the steps and VEPCO which has suffered the broken toes."

Stanley Ragore, VEPCO executive vice president, said company officials are pleased at the partial vindication. Yet even with the reduced fine, a VEPCO spokesman said company officials were considering appealing the decision to the U.S. Court of Appeals.[16]

This move was forestalled by the decision of the full Commission to review the Disclosure decisions. Normally the Appeal Board is the last administrative body to review a case. However, the Commission can, on its own motion, review particular issues. At present the parties to the Disclosure proceeding are submitting briefs to the Commission.

As earlier stated, NAEC was formed to educate the public generally, about the potential dangers of nuclear power and specifically, about the potential dangers of a four-reactor plant at North Anna. The coalition did not organize to intervene in North Anna proceedings.

Since the group was not formed for the purpose of intervention, it had not made any effort to acquire the proper resources for such an undertaking. When NAEC did choose to intervene in January 1974, it found itself ill-equipped to proceed.

First, NAEC had no staff to do the research to develop a case. Usually, this task fell to the lot of Mrs. Allen and Mrs. Dietrich, and occupied much of their time and effort. The task was doubly hard on these people because of the various complications in obtaining information, for example, formal discoveries. Secondly, the only funds available to bring technical witnesses to the show cause proceeding, had to come from NAEC.[17] NAEC funds, based on annual membership dues, rarely exceeded $200 at any given time. Finally, the time required in attendance on various proceedings, prehearing and hearings, was resented by those in professional positions who had to take time off from work in order to be able to appear.

The coalition did attempt to find other groups, for example, state agencies, that would bring their greater resources to bear. While the state did take a limited role in the disclosure proceeding, its position during the show cause proceeding was essentially that of VEPCO. NAEC, thus, ended up relying chiefly on itself.

NAEC was fortunate with respect to the intervention that a lawyer offered his services (free) to the group just prior to the show cause hearing. The coalition, otherwise, would have been unable to retain one.

Without his assistance, NAEC members recognize that it would have been almost impossible to participate in the second intervention. The legalistic nature of the disclosure issue and the amount of legal knowledge needed to prepare the case, made a lawyer's service indispensable. A law student assisted Rodgers during the proceeding.

Thus, though the group did not have the necessary resources at the beginning (e.g. large supply of funds), it has managed to adapt. Rodgers' free services were the most significant factors contributing to the adaptation.

Although the coalition had felt it lacked the proper resources, it did petition to intervene in the show cause proceeding. Interestingly enough, the causes to be discussed there did not include the material false statements raised in NAEC's letter of August 22, 1973. Rather, the emphasis was on the safety aspects and technical implications of the fault (adequate seismic design, etc.). Material false statements were considered separately later on.

The NAEC did not feel that the public interest was adequately represented by the show cause parties: VEPCO, the AEC and the Commonwealth. The public interest being defined as "that point of view concerned with choices imposing the smallest economic and physiologic costs upon the public."[18] VEPCO was perceived as acting to protect its investments and associated economic interests. The AEC was seen to be promoting the industry. According to the coalition, the AEC would probably have let the fault issue go by and not have a public hearing on it. This can be seen in an excerpt from an NAEC letter to Dixy Lee Ray on October 17:

> "We are moved to inquire if, had there been no coalition, the Dames and Moore report would have been quietly inserted into the evidentiary record beside the Cardone affidavit, and VEPCO would have continued constructing one of the largest nuclear power stations in the world astride a major fault."

The Commonwealth, by providing no opposing views to those of VEPCO and the AEC, seemed to offer de facto support to VEPCO. The NAEC hoped that by its presence at the show cause hearing, that the public interest would be better represented.[19] In essence, an outside viewpoint would be added.

Objectively, VEPCO, the Commonwealth and the AEC are subject to conflicts of interest. VEPCO must balance the demands and the well-being of its consumers with its economic costs in mind. If a power plant is proved unsafe, all investment is lost. Consumers end up paying for the lost investment, and the stockholders suffer. The company's basic interest is in supplying cheap, reliable electricity then. The Commonwealth is interested in providing electricity for its citizens and in assuring that there is no risk to the public. The AEC functioned in conflicting roles—promotion and regulations. On the other hand, the coalition may be said to be motivated solely for the protection of public health and safety. They sought to stop construction of a dangerous (in their eyes) plant.[20]

Though the NAEC did intervene, it was evident at the show cause hearing, the focal point of intervention, that the group felt the momentum was too strong for the coalition to be able to affect the decision. William Warren, then President of the NAEC, states in his limited appearance that "it is too late for the public really to have an important voice in these decisions. The people should have its voice and be listened to much earlier, when the sites are chosen and when the investigations are first started."[21]

Chairman Farmakides advised Mr. Warren "that the Commission agreed that there should be early public participation and they have recently issued early notices of hearings before the plant site has been finally determined."

In the North Anna case, however, VEPCO was convinced that the site was both safe and suitable. VEPCO felt that to identify the problem to the public without further explanation was a disservice to the public. So, the company collected and presented the testimony of the best geological experts, in order to reassure the public that VEPCO's investigations had been thorough and that no risk to public safety and health was present.[22]

The testimonies of these consultants such as that by Dr. Lowell A. Douglas, Professor of Soil Minerology at Rutgers University (specialist in piedmont soils hired by Dames and Moore to investigate the North Anna site) were very persuasive. Dr. Douglas said that, "There has been no movement of the fault since the soil began forming, and since the soil is very old--at least a million years old--then the fault must not have moved for at least that length of time." The conclusion reached was: "It is my professional opinion, based on my study of the soils at the North Anna site, that the fault is not 'capable' within the meaning of 10 C.F.R. Part 100, Appendix A."[23]

During the Disclosure proceeding, the NRC assumed the regulatory functions of the AEC, while ERDA took research and development. However,this functional separation was seen by the coalition members as a mere legality. The NRC was perceived to be playing the same two roles of the AEC.

Because of these perceptions, the NAEC sought to remove decisions from the NRC. Thus, the coalition appealed ALAB-256 (fault) to the U. S. Court of Appeals. The NAEC also asked that the Department of Justice consider a criminal investigation with respect to VEPCO violations of (material false statements). A more objective decision-making was being sought.

Essentially, the NAEC felt it was doing the agency's job of protecting the public health and safety. For instance, the coalition believed the "VEPCO conviction (material false statements) came only as a result of persistent citizen action and not because of regulatory or state insistence upon integrity and completeness of information."[24]

Not only does the NAEC perceive itself as doing the agency's job through its intervention, it also sees its contributions are made mostly in the area of licensing procedures. For example, "closer examination of guidelines for determining distance and activity of earthquake fault-lines on acceptability of proximate location of reactors."[25] No doubt, a more careful reporting of safety information, as a result of the VEPCO convictions will also result.

These sorts of changes are considered valuable by VEPCO. William Proffitt, Senior Vice President-Power, feels that public participation in NRC hearings is capable of providing both the agency and industry with important input concerning how they need to conduct their respective operations.

Yet these changes are not the ones that the coalition sought. Its immediate goals were suspension or revocation of construction licenses.

The changes such as site selection study that have come are perceived as "too late to have any effect upon the health and safety of Virginians. For, construction goes on feverishly at the fractured site where even the design is inadequate."[26]

Thus, while the coalition performs the function of a "regulatory gadfly" (keeps the agency in line) and aids others at the national level, it is unable to help itself on the home front.

The NAEC has no desire to continue in this role. It is a strain and is highly unnecessary. "Citizens should not need to mount major actions against their government." The coalition would prefer that the regulatory agency fulfill its functions responsibly so that the group could return to its research.

An effort to balance representation of interests in the agency was considered as a possible answer by Mrs. Allen. However, she felt that it would probably accomplish little given the history of the agency.[27]

"The desired change has to be totally different," she says. "Decisions as multi-generational and as physiologically significant as the commitment of an entire nation and world (via Westinghouse and General Electric) to the use of nuclear power should be made by the vote of an informed public."

There is some debate over whether this can be accomplished. Experience with the North Anna case illustrates the problems of technical decisions.

The geologic fault was a highly technical issue, one that required and rested on a great deal of expert testimony. William Proffitt, when questioned about the value of public participation in the show cause hearing, responded that he was not satisfied that public participation, *per se*, had helped improve the record for the decision.[28] In his opinion, a certain expertise was required and he believed the agency was best equipped with that knowledge.

Proffitt generalized from this and said that industry has always found it difficult to explain to lay persons (media and the general public) the very sophisticated problems it encounters. People such as coalition members, often respond to these remarks that they are quite capable of comprehending technical matters and that experts are very able to simplify them.

This issue of communicating technical knowledge to a lay person seems to be unresolved. Yet its importance is obvious and therefore, the issue should be studied further.

In summary, through participation in the North Anna proceedings, NAEC members have had considerable contact with agency and industry officials. The end result has been the creation of a credibility gap between the coalition and NRC/VEPCO.

NAEC members presently perceive that NRC is still torn between promotion and regulation and thus unable to adequately protect public safety and health. Further, they see VEPCO's submission of material false statements as indicative of a lack of commitment on VEPCO's part to nuclear safety. Because of these perceptions, NAEC members have become disillusioned with the licensing process and all that it means. A change, for them, must be totally different.

FOOTNOTES

[1] Docket files 50-338, 50-339 of the Nuclear Regulatory Commission. The general chronology is based on material in the files.

[2] Interview. Mrs. Margaret Dietrich, Secretary of NAEC, July 17, 1976.

[3] U.S. Congress, Senate, Committee on Government Operations, Informa-Management by Federal Regulatory Agencies, Hearings before the Subcommittee on Reports, Accounting and Management of the Committee on Government Operations, Testimony of June Allen, 94th Congress, 1st session, July 22 and 24, 1975 (Part 1) pp. 112-113.

[4] Ibid., pp. 115-118. Information on state agencies and NAEC comes from NAEC progress report listed here.

[5] "Representative Robinson Supports Adequate Public Notice...," NAEC Release, January 17, 1974.

[6] Docket files 50-338, 50-339. Hearing Transcript for Show Cause proceeding, (March 20-April 4, 1976) limited appearance of June Allen.

[7] "Woman Fights Nut," Richmond Times Dispatch, March 20, 1974.

[8] Docket files 50-338, 50-339, Hearing Transcript for Show Cause proceeding, March 20-April 4, 1974. Comments based on reading of limited appearances made March 21-22.

[9] Docket files 50-338, 50-339, op. cit., Limited appearance of June Allen.

[10] "Court Asked to End Louisa Nuclear Permit," Washington Post, March 20, 1976. (Section E, page 4, column 7).

[11] "Bruce Rosenthal, "Virginia Utility Guilty of Cover-up," Critical Mass, July, 1975, p.1.

[12] Ibid., p.1.

[13] Ibid., p. 11.

[14] Docket files 50-338, 50-339, ASLB decision issued September 10, 1975.

FOOTNOTES (Continued)

[15] Wall Street Journal, article referring to $60,000 VEPCO fine, September 12, 1975.

[16] "Fine is Reduced in VEPCO Plant Case," Washington Post, April 16, 1976.

[17] Interview. June Allen, President of NAEC. July 24, 1976.

[18] Ibid., June Allen.

[19] Interviews. Based on general comments of NAEC members listed in the Bibliography.

[20] Interview. Frederick Fisher, Assistant Attorney General for the Commonwealth of Virginia. July 22, 1976.

[21] Docket files 50-338, 50-339, Hearing Transcript for Show Cause proceeding, (March 20-April 4, 1976.) limited appearance of William Warren.

[22] Interview. William Proffitt, Senior Vice-President-Power. July 23, 1976.

[23] Docket files 50-338, 50-339, Hearing Transcript for Show Cause proceeding, (March 20-April 4, 1976.) testimony of Dr. Lowell A. Douglas.

[24] U. S. Congress, Senate, Committee on Government Operations, Information Management by Federal Regulatory Agencies, Hearings, op. cit. p.85.

[25] Boasberg, Hewes, Klores, and Kass, Policy Issues Raised by Intervenor Requests for Financial Assistance in NRC Proceedings. Special report published July 18, 1975 for the Nuclear Regulatory Commission. Quote from section entitled "Intervenor Contributions."

[26] U. S. Congress, Senate, Committee on Government Operations, Information Management by Federal Regulatory Agencies, Hearings, op. cit., p.86.

[27] Interview. June Allen. op. cit.

[28] Interview. William Proffitt. op. cit.

Appendix A

CHRONOLOGY

March 21, 1969	VEPCO filed an application for authorization to construct and operate two nuclear reactors, designated as North Anna Power Station Units, No. 1 and No. 2, on a company site located near Mineral, Virginia.
November 23-25, 1970	An evidentiary hearing on construction permits for Units 1 and 2 took place.
February 19, 1971	The construction permits were issued to VEPCO.
September 1971	The application for permits to construct North Anna Units 3 and 4 was filed.
January 3-April 28, 1973	Excavation for Unit 3.
March 9-June 15, 1973	Excavation for Unit 4.
April 24, 1973	VEPCO initiated a fault study after noting rock displacements during excavations for Units 3 and 4.
May 7-10, 1973	An evidentiary hearing on construction permits for Units 3 and 4 took place.
May 17, 1973	VEPCO informed the AEC of the presence of a fault beneath the North Anna Power Station.
August 3, 1973	The ASLB, which was presiding over construction permit proceedings for Units 3 and 4, was advised by the AEC staff of a pending investigation of a geologic fault at the North Anna site.
August 4, 1973	NAEC released the story of the fault to the press.

August 22, 1973	NAEC asked the ASLB to reopen Construction License Records on the four North Anna Units and to convene a public hearing in Louisa on the matter.
September 11, 1973	NAEC sent a formal letter to the AEC Staff requesting that no construction licenses be granted for North Anna Units 3 and 4 until investigations were complete. Further, NAEC requested that licenses for Units 1 and 2 be revoked for "material false statements" about faulting at the site.
October 17, 1973	The Director of Regulation ordered VEPCO to show cause why construction permits for Units 1 and 2 should not be suspended pending completion of the excavation of the fault. The AEC Staff filed for a further hearing on construction permits for Units 3 and 4.
November 6, 1973	VEPCO, in response to the Show Cause order, asked for a hearing and motioned that the Show Cause hearing be consolidated with the Staff requested hearing for Units 3 and 4.
December 27, 1973	A hearing notice for the Show Cause proceeding was published in the Federal Register.
January 14, 1974	The Commonwealth of Virginia petitioned for leave to participate as an "interested state."
January 26, 1974	NAEC petitioned for leave to intervene in the Show Cause hearing.
February 11, 1974	A prehearing conference was held in Fredericksburg, Virginia. The Board approved a consolidation of all separate hearings pending on the geologic fault.
February 28, 1974	In a stipulation executed by all parties, the material false statements were removed from consideration in the Show Cause proceedings. Further action on

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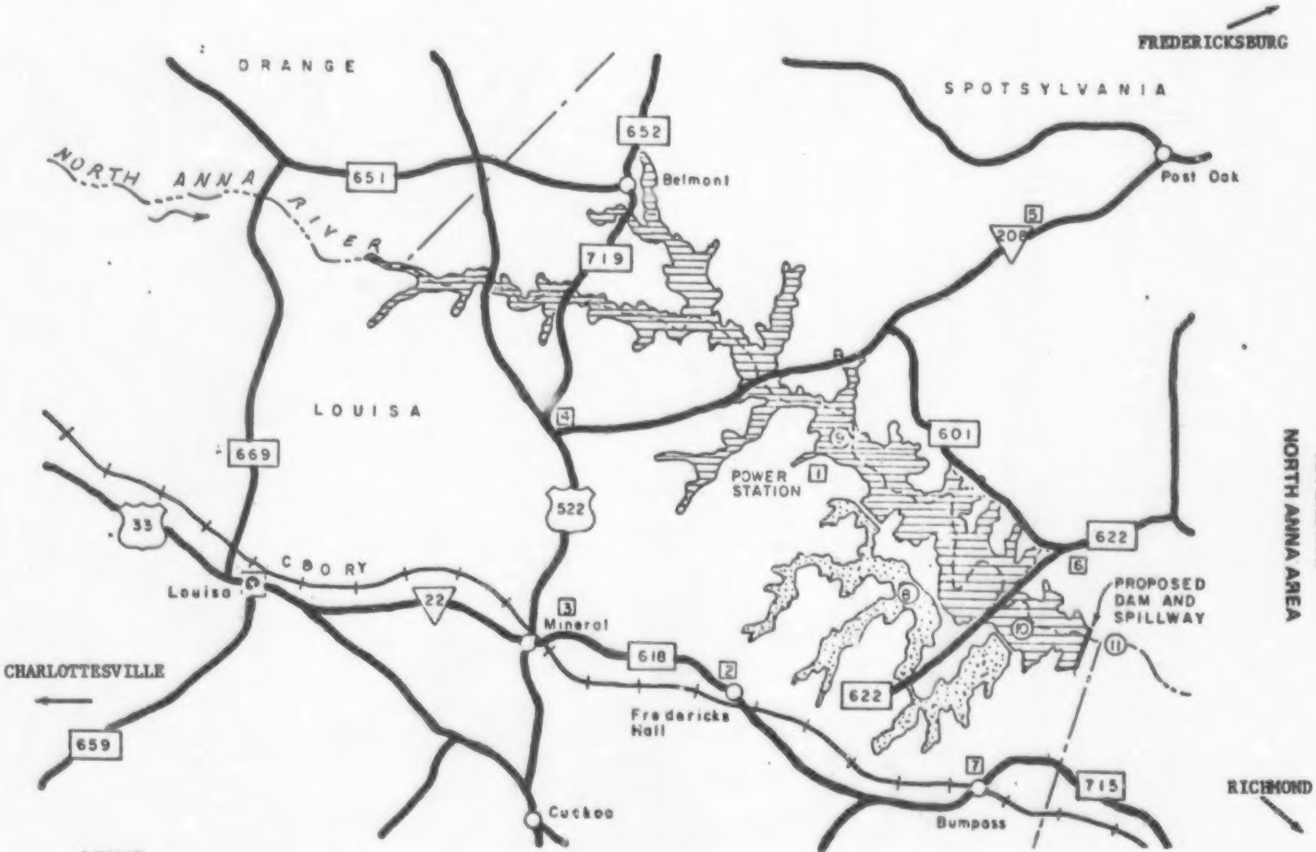
August 4, 1973	NAEC released the story of the fault to the press.

	the statement was postponed until AEC Staff report was issued.
March 20, 1974 - April 4, 1974	The Show Cause hearing took place in Louisa, Virginia. The safety aspects of the geologic fault were discussed.
March 25, 1974	The AEC Staff completed its investigation of the material false statements (disclosure issue), and concluded in its report that "no violation of AEC regulations had been found."
April 23, 1974	NAEC requested that a hearing be held on the disclosure issue.
May 28, 1974	The AEC approved the request and assigned the ASLB that presided in the Show Cause proceeding to deal with the disclosure issue.
June 27, 1974	The ASLB rendered an initial decision. Safety aspects of the fault were resolved in VEPCO's favor. Construction of North Anna Units 1 and 2 was continued.
July 18, 1974	The ASLB authorized the issuance of construction permits for Units 3 and 4.
July 23, 1974	A prehearing on the disclosure issue was held in Fredericksburg, Virginia.
October 22, 1974	A hearing notice for the Disclosure proceeding was published in the Federal Register. No other parties petitioned to intervene.
January 27, 1975	ASLAB affirmed the Show Cause decision in order ALAB-256.
January 29-30, 1975	An evidentiary hearing was held on the disclosure issue. A supplemental hearing took place February 13, 1975.

April 4, 1975	The ASLB issued an interlocutory order in which it announced its determination that twelve material false statements had been established.
May 28, 1975	An evidentiary hearing was held to determine the penalties to be awarded to VEPCO.
September 10, 1975	The ASLB rendered an initial decision. The Board levied a $60,000 fine and modified the construction permits.
March 3, 1976	U. S. Court of Appeals affirms ALAB-256.
April 15, 1976	ASLAB "affirmed in part, modified in part, and reversed in part" the ASLB Disclosure decision. It found four material false statements and fined VEPCO $17,500 for these violations.

APPENDIX B
NORTH ANNA AREA


FREDERICKSBURG
ORANGE
SPOTSYLVANIA
NORTH ANNA RIVER
651
652
Belmont
Post Oak
5
208
719
LOUISA
4
669
601
POWER STATION
1
9
522
33
C & O RY
Louisa
22
3
Mineral
618
2
Fredericks Hall
622
6
8
10
PROPOSED DAM AND SPILLWAY
11
CHARLOTTESVILLE
659
Cuckoo
7
Bumpass
715
RICHMOND

LEGEND

▤ RESERVOIR

▨ TREATMENT LAGOON

ROADS SHOWN ARE EXISTING.

0 1 2 3 4 5

Scale-Miles

The reactors are located on a peninsula in a 13,000 acre reservoir that was formed when an earthen dam was constructed approximately five miles southeast of the site. The reservoir is divided by dikes and canals into two impoundment areas. The larger impoundment area supplies condenser cooling water while the smaller one (called a treatment lagoon) would serve primarily as a heat exchange basin.

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Allen, June	NAEC President as of December, 1975	Saturday, 7/24
Allen, Phillip	NAEC member	Saturday, 7/24
Dietrich, Margaret	NAEC Secretary	Saturday, 7/17
Farmakides, John	ASLB Chairman	Wednesday, 7/21
Fisher, Frederick	Asst. Attorney General, Commonwealth of Virginia	Thursday, 7/22
Kartalia, David	NRC Counsel	Tuesday, 7/27
Maupin, Michael	VEPCO Counsel	Friday, 7/23
Proffitt, William	VEPCO Sr. Vice President-Power	Friday, 7/23
Rogers, James (Mr. & Mrs.)	Local residents, NAEC members	Saturday, 7/17
Vaughan, Marjorie	Local resident, NAEC member	Saturday, 7/17
Vaughan, Phyllis	Local resident, NAEC member	Saturday, 7/17

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